WARFARE’S WIRING: NERVOUS SYSTEM RESPONSES TO COMBAT SERVICE AND THE POLICY PREFERENCES OF COMBAT VETERANS

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By

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ABSTRACT

Americans prize military service, particularly combat service, in their political decision-makers. Indeed, combat service is supposed to create a colloquial 'band of brothers' among veterans—a homogeneous group expected to be changed by their experience in a consistent and positive way, such that their views on the conduct of foreign policy are trusted and revered. At the same time, Americans are increasingly aware of the mental health challenges that can accompany combat service; they often treat the ‘everyday’ combat veteran with a mix of sympathy and skepticism, as a group expected to be changed by their experience in a consistent and negative way, such that their decision-making and behavior are warily viewed. How is it that these two disparate narratives about the fundamentally same population perpetuate? This dissertation seeks to reconcile this gap that exists in our understanding of how combat may actually impact political preferences, offering the first comprehensive integration of bodies of literature on military socialization, the human stress response, and political decision-making.

Using a plausibility probe design, it constructs the first ever theory of combat-related autonomic nervous system dysregulation and political decision-making, exploring how war-related shifts in the mind, brain, and body may underpin the future foreign policy preferences of combat veterans. It then pilot tests this theory in three separate studies, including an original survey of combat veterans, a broad-based comparative survey of veterans and civilians, and a time-series analysis of veterans in Congress. The findings both confirm and challenge some of the theory’s central insights, and suggest a long future research program in the analysis of trauma and political behavior. After all, as the number of combat veterans entering the political sphere increases, better understanding such a trend may be the key to predicting and selecting the future foreign policy of the United States.
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INTRODUCTION

“This is the only time in modern presidential history when we’ve had a small number of people from the uniformed world hold this much influence over the chief executive...They are right now playing an extraordinary role.” – John McLaughlin, forming acting director of CIA (Costa & Rucker, 2017)

In the early months of the Trump administration, U.S. civil-military scholars have tracked an interesting phenomenon: the dominance of military opinions throughout the Federal Government, particularly in the executive branch. As of December 2017, the White House Chief of Staff, Defense Secretary, and National Security Advisor are each four-star (Marine Corps, retired), four-star (Marine Corps, retired), and three-star (Army) generals, respectively. The head Middle East advisor on the National Security Council (NSC) is a retired Army colonel. In fact, 10 of 25 senior positions on the NSC are held by current or former military servicemembers—including the Deputy National Security Advisor, the Chief of Staff, and the top Africa, Asia, International Organizations, Weapons of Mass Destruction, and Counterterrorism Advisors (Ryan & Jaffe, 2017). The CIA Director achieved the rank of captain in the U.S. Army; the Energy Secretary, the rank of captain in the U.S. Air Force. The Attorney General served as a captain in the U.S. Army Reserve. The Secretary of the Interior retired as a Navy commander. A former Army general leads the Bureau of Prisons.
This reliance is argued to be particularly unique in the Trump administration, after a seeming long-term decline in the number of veterans in high-level government roles. Echoing the declining rates of military service in the general population, the number of veterans in Congress has consistently dwindled, reaching roughly 20% in recent years (Blake, 2013) — a stark contrast to the 62% of Senators and 60% of Representatives with military service in the 86th Congress (Janowitz, 1960). At the end of the Obama administration, only two of the top 25 NSC roles were occupied by individuals with prior military service (Ryan and Jaffe 2017). The shift away from military participation in governmental affairs had become so common that one author argued in 1997 that “in another decade the senior public official with military experience will be a rarity” (Zillman, 1997, p. 87).

However, though the actual proportions have ebbed and flowed, there is no doubt that a more broad-based reliance on key military figures throughout public service roles has actually been an enduring feature of the Federal Government. Of course the line between military and civilian control has always been a clear one; indeed, a notable sect of American political culture has been wary of military dominance of political decision-making, and implemented a number of early safeguards to ensure that civilians were constitutionally in control of governing (Huntington, 1957). Yet even with those safeguards, veterans in civilian political roles (be they appointed or elected) has long been a commonplace occurrence. Some of the longest serving and most well-known U.S. Senators in modern history — including John McCain, John Kerry, John Dingell, Frank Lautenberg, and Daniel Inouye — all have been
celebrated as leaders and decision-makers, often due to their well-known military service. Those that have campaigned for President have used it as a focal point of their campaigns; in 2008 Senator McCain’s famous “624787” advertisement emphasized his military service, leadership, and courage as desirable in a president, while Senator Kerry’s 2004 convention nomination revolved entirely around his decorated combat service and sense of duty. Furthermore, though he had never served in combat as a member of the Texas Air National Guard, President George W. Bush’s military service was *similarly* invoked repeatedly in response to Kerry’s military emphasis. After the first prolonged ground-war test of the All-Volunteer Force (AVF) in Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF), it is no surprise that in 2010 Congress saw an uptick once again in veterans running for and serving in Congress (Blake, 2013). A broad-based push for increases in veteran’s preference hiring means the last two decades have almost doubled the number of veterans working full-time for the Federal Government; indeed, younger veterans are 15 times more likely than nonveterans of the same age to serve in the Federal Civil Service (Lewis, 2017). At the level of state politics, data interpreted from the U.S. Department of Veterans Affairs shows veterans make up anywhere from 6% to 23% of state legislatures (Burgess & Daniel, 2016).

It is natural that these are the roles individuals with military experience would gravitate towards — roles that serve the nation’s interests, that often require specialized knowledge of key defense structures and national/international relationships, and that have fast-paced and challenging work environments. Military service is often invoked
as a uniquely informative background relative to national security decision-making; one colonel describing President Bush’s response to 9/11 specifically said, “I saw… a military man… He was executing as a military man would do and mak[ing] decisions right on the fly” (Horowitz, Stam, & Ellis, 2015, p. 9). Even more generally, a number of veterans’ organizations and authors argue that the sort of integrity and duty emphasized repeatedly throughout military service make servicemembers and public service roles a perfect fit—as two veterans emphasizing the need for more veterans in Congress articulated, “lawmakers who have served in the military often have a specific sense of duty and an uncommon ability to reach across party lines and get things done” (Barcott & Wood, 2017, n.p.). This ‘uncommon’ skill, in other words, makes the veteran well suited to the public service career; it is fitting they should end up in such roles.

Importantly, servicemembers in public service roles do not just seek out these roles—we also seek them out for them. Something about military service represents a key quality that decision-makers—from Presidents to the voters—want in their policymakers. Legislators revere and trust their veteran colleagues’ assessments, while the media’s fourth estate trusts their expertise and acumen. As Swers (2007) notes, the ability to draw on a background of military experience enhances the defense profiles of senators in both the legislative and public arenas. Senators who served in the military did not sponsor more defense-related legislation than other senators. Yet their policy proposals were more likely to advance through the legislative process, and they were more likely to appear on the Sunday shows as authorities on national security. By raising legislators’ profiles as opinion leaders,
these talk show appearances raised senators’ policy profiles with colleagues and solidified their reputations with constituents and the public at large. (p. 588)

The public’s assessment of veteran policymakers is no different. A long-term series of polls have found the reputation of the military among the public to be extremely high (Torres-Reyna & Shapiro, 2002); in fact, even with recent declines, servicemembers still remain the most trusted institution among the United States public with 72% of Americans reporting a lot of confidence in them (Drezner, 2017; Newport, 2017). Citizens are “enormously deferential” to the military on a number of defense- and foreign-policy related topics, and even demonstrate evidence that they favor a greater role for the military in society than standard civil-military relations would allow for (Schake, 2016, n.p.).

It thus comes as no surprise that constituents show explicit evidence of following these anointed ‘opinion leaders.’ Not only do individuals simply feel differently toward (and subsequently vote differently for) veterans versus nonveterans running for public office (Teigen, 2007, 2013); new evidence shows individual civilians actually tend to adopt the preferences of military leaders in public policy. In a recent study of more than 11,000 individual surveys, the authors found that individuals predictably and significantly sided with the opinions of military leaders on major political and foreign policy issues more strongly than with other political leaders (Golby, Feaver, & Dropp, 2017).

What is it about military service that generates this sense of confidence and trust? Why do we attach more credence to the opinions of high-ranking military officials than
traditional civilian ones? Golby et al. (2017) offered the argument in their survey that military opinion influences public opinion primarily through its impact on a mission’s perceived legitimacy and, to a lesser degree, its perceived likelihood of success. In short, we trust that military leaders are rational and balanced leaders, capable of accurately estimating values and risks. This trust and confidence is largely rooted in the officially designated ‘apolitical’ nature of the military itself; servicemembers are presumed to lack the partisan bias that civilians may assume motivates most political action (Feaver & Kohn, 2001). Put simply, civilians revere the rational austerity the military adds to an increasingly polarized political arena. Indeed, when recently asked about the prevalence of veterans in the Trump administration, Senator Richard Blumenthal echoed such sentiments himself: “There certainly has been a feeling among many of my colleagues that [the veterans in the White House] are a steadying hand on the rudder and provide a sense of consistency and rationality in an otherwise zigzagging White House” (Costa & Rucker, 2017, n.p.). There is a vaguely assumed sense that people simply trust members of the military in policymaking roles more than those without military service—whether on issues of defense and foreign policy, or more generally.

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Yet, if you enter ‘veterans data’ into any online search engine, survey results about public trust in military policymakers is unlikely to fall within your first ten results—or first thousand. Instead, the veterans’ issue that has dominated news cycles for the past 15 years is the dramatic rate of health effects suffered by veterans of the
wars in Iraq and Afghanistan. Buoyed by recent advances in medical technology—paired with important shifts how wars are being fought—we know more than ever about complex combat-related injuries including Post-traumatic Stress Disorder (PTSD) and Traumatic Brain Injury (TBI). The increased attention country-wide reflects the commitments by the executive branch, Congress, the Department of Defense (DoD), and the Department of Veterans Affairs (VA) to improve psychological health research and care; these groups convened task forces, commissions, and reviews (Meredith et al., 2011) and introduced a wide-ranging set of programs designed to enhance psychological resilience among America’s war-fighters. Outside reviews of programs have found hundreds of publications and more than 70 unique resilience programs used among veteran populations (Meredith et al., 2011). Congress has repeatedly directed “billions of dollars” towards understanding the needs of this new, unique veteran population (Tanielian & Jaycox, 2008, p. 8)—signaling both that this topic is significant in its reach, and in its priority level.

Military suicide, in particular, has become a focus of national conversations about veterans’ experiences and care. Following evidence that the overall rate of military suicides—a rate that had previously been more than 50% below the comparable civilian rate—exceeded the suicide rate in the civilian population by 25% (Bush et al., 2013; Nock et al., 2013), the Federal Government redirected numerous resources to this troubling phenomenon. The DoD committed more than $107 million to research studies on suicide prevention from 2005-2014, including $50 million for the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS) (Ramchand et al., 2014).
These figures funded more than 61 individual projects, in addition to the more than $50 million worth of projects sponsored by outside agencies such as the Department of Health and Human Services (HHS) and the VA (Ramchand et al., 2014).

Perhaps one of the surest indicators of just how powerful the association between mental health and military service has become is the prevalence of military mental health discussions in popular culture. A survey administered by the Got Your Six campaign found that more than 80% of civilians expect veterans to have more mental health issues than average citizens, and that the dominant perception of veterans is ‘broken’ or ‘damaged’ (Marvin, 2014). A similar survey from the George W. Bush Institute’s Military Service Initiative found civilians expected more than half of post-9/11 veterans have a mental health condition. A film festival for movies focused on veterans estimated that at one point 80% of its submissions were focused on PTSD (Merry, 2015). From reporting, to political movements, to film, this ‘social construction of PTSD’ has undoubtedly come to dominate how individuals think about veterans (so powerfully, in fact, that evidence shows people consistently misidentify the actual prevalence rates of PTSD, homelessness, and other characteristics of veterans) (Summerfield 2001; Marvin, 2014).

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How is it that two such disparate narratives about seemingly the same population have emerged? Americans have developed an astonishing capacity to both place more faith in the rational decision-making of veterans and less faith in the rational
decision-making of veterans. We simultaneously assume that combat in particular makes someone more trustworthy and less trustworthy. The civil-military gap at the societal level endures, in part, because we treat veterans with a sense of awe—awe motivated by reverence as much as by apprehension.

Some may argue that these two Venn diagram circles—veterans in public service and veterans with post-combat mental health challenges—do not overlap, and that they are two independent narratives (and disproportionately small ones at that) that do not merit broader consideration. In other words, individuals might presume that those who suffer the adverse mental health effects of combat will manifest those symptoms so obviously that they would never be eligible for governmental service; furthermore, they might presume those who do not manifest such symptoms are necessarily resilient, such that they have unique character traits desirable in political office.

That said, the relationship between veterans in public service and military-specific mental health challenges has still entered national discourse several times, albeit in tepid ways. For instance, when John McCain campaigned for the presidency, questions about how his prior Prisoner of War (POW) status may have had a psychological effect—in particular, in cultivating a notoriously scathing temper—led McCain to release hundreds of pages of medical records to demonstrate his mental fitness for office (Brown, 2008).

Yet, outright questioning of the intersection between military service and mental health in policymakers is largely avoided. For example, consider that retired Lt. Gen. Michael Flynn (former National Security Advisor for the Trump administration) was
ousted from leading the Defense Intelligence Agency in the Obama administration for clashes over his “chaotic” and “disruptive” leadership style (Miller & Goldman, 2014, n.p.). By 2016, a retired Army general who had previously supported Flynn publicly questioned Flynn’s mental fitness in an interview, labeling recent behaviors possibly “demented” and saying that they deserved further scrutiny from the public (NBC News, 2016). However, no major news organization or policymaker pursued the topic; even now, mere mentions of Flynn’s mental fitness in office appear wholly absent from most major sources. This simple anecdote illustrates just how unwilling the public is to bridge that gap between how they view veterans in public office and how they view veterans more generally. When our reverence of veterans crashes into our perceptions of their mental health, our reverence tends to win—and we may not ask, or answer, important questions about whether these fields do or do not converge.

Perhaps even more astonishing than this puzzling gap in our commonplace understanding of what military service means for political decision-making is the academy’s lack of interest in it. Recent efforts on stress and decision-making in international affairs aside (Hafner-Burton, Haggard, Lake, & Victor, 2017; Renshon, Lee, & Tingley, 2017; Stanley 2018), on the whole, political science has consistently struggled to broadly engage with the complicated literatures of neuroscience, behavioral economics, and the human stress response to offer an explanation for what certain experiences might actually mean for policymaking behavior. Certainly little scholarship has asked how the complex mental experiences that may specifically come with military service may impact the behaviors of veterans. The public may be willing to tolerate the
gaping distance between how we trust veteran decision-making capacity in political roles yet question veteran decision-making capacity on the ground, but the academy should not.

Thus, this dissertation seeks to fill this essential scholarly gap, by positing a detailed theory of what military experience may mean for political decision-making. Specifically, it seeks to answer key questions about how the stress of military service may impact individuals’ decision-making structures, how large/deep that impact on decision-making and behavior is, and if we can reasonably expect that impact to influence or even dictate public policymaking. It seeks to probe our understanding of common conceptualizations of mental health, military service, and political decision-making, and in doing so, it offers a new way of viewing the veteran in public service.

To accomplish this objective, this dissertation first provides a comprehensive overview of several key bodies of literature, each unique in their topics but essential to the broader investigation at hand. First, Part 1 of Section I investigates what we know about military service as a whole—whether it shapes those who serve, and if so, how. This section focuses primarily on past conceptualizations of theories of military socialization, then transitions to surveying the most recent considerations of military service’s impacts. After a review of the largely quantitatively-based assessments of veterans’ service-related health, it offers insights into the limited amount of knowledge we have about how military service might shape attitudes and interests.

Next, Part 2 of the Section I literature review considers the human stress response and our existing knowledge of the impact of traumatic experiences. Notably,
this part surveys the literature with a broad scope, moving beyond relatively narrow concepts like PTSD to instead offer general insights into what we know about the process of how the mind, brain, and body respond to stressful experiences. After considering a specific theory connecting the sympathetic and parasympathetic nervous systems’ responses to threat, it summarizes recent advances in understanding the concept of autonomic nervous system (ANS) dysregulation and its associated symptoms.

In Part 3, the Section I literature review concludes with a review of decision-making research in political science. It focuses on examining how people form the preferences and select the options that they do, particularly in policymaking contexts. This includes a review of common cognitively-oriented and affectively-oriented theories, as well as a consideration of some of the hybrid theories applied in political decision-making literature. It concludes with an in-depth examination of one theory of decision-making largely accepted within the neuroscientific literature—the dual systems theory of decision-making—that has recently begun to be introduced to political science audiences. It offers an in-depth consideration of the theory’s tenets, and how it may motivate political choice.

After establishing the elaborate history of research that exists across theories of military service, theories of stress response, and theories of political decision-making, this dissertation then embarks upon a comprehensive theory-building endeavor in Section II. Through a complex series of arguments attributing elements of military service to elements of ANS dysregulation, and elements of that ANS dysregulation to
elements of political decision-making, the theory offered in Section II argues that military servicemembers with combat experience may be more likely to experience ANS dysregulation, and that dysregulation may be likely to restructure the operations of their decision-making systems such that their affectively-driven decision-making will strengthen and their cognitively-driven decision-making will degrade. Indeed, the theory goes a step further to consider whether this specific dysregulation-motivated outcome means combat veterans may be likely to hold decidedly neutral foreign policy opinions, neither hawkish nor dovish in orientation.

Next, the dissertation lays out a plausibility probe research methodology in Section III. After explaining why the design is particularly appropriate for the theory at hand—largely due to the exploratory nature of this new yet complex theory—it lays out the specific mixed methods designs that the project employs in a multi-analysis investigation of the theory’s tenets. Specifically, this Section offers insight into three distinct research designs used to investigate how the mechanisms of the theory advanced in Section II may actually operate: (1) an original purposive survey of veterans’ traumatic combat experiences, ANS symptoms, and foreign policy preferences; (2) a large-scale random sample survey of veterans and civilians’ experiences and foreign policy preferences; and (3) a cross-sectional time-series analysis of combat veterans’ policy preferences in congressional voting records. Taken together, these multiple mixed methods analyses allow the theory’s relationships to be explored in a comprehensive fashion; the three different samples, different methodologies, and
different time periods are selected to offer an initial snapshot of this new theory’s mechanisms.

Section IV then provides the individual analyses laid out in the methodology, offering a number of quantitative and qualitative outcomes and interpretations of the data collected across the multi-analysis research design. Through a diverse use of parametric and non-parametric methods, it reveals the first findings of how combat service, dysregulation, and political preferences interact. Specifically, this Section reveals a number of statistically significant associations between each of the theory’s variables—but at the same time, finds a number of conceptually significant non-relationships that illustrate some new potential hypotheses and avenues for revising the theory’s hypotheses. Section IV concludes with a summary of the overall plausibility probe design’s lessons and limitations, synthesizing what we know about combat, dysregulation, and policy preferences—and as importantly, what we still do not know—from this first major step toward a broader research program.

Finally, the Conclusion offers a summary that synthesizes the many strands of inquiry this dissertation considers. Specifically, it offers a detailed review of the lessons and limitations taken from each Section of the dissertation, and importantly, considers the multiple implications of its findings for future research. Indeed, in this section the dissertation engages not just with what these findings mean for the future of political science research in this field, but also what the broader policy implications are for the issues investigated herein. It concludes by offering a series of next steps for further refinement and testing of the theory.
Scholars and citizens alike cannot continue to hold two such powerful but contradictory views of veterans, while political science cannot continue to neglect the highly complex but informative lessons of the brain in situations of complex stress and trauma. It is time we attempt the messy process of reconciling these understandings, and this dissertation represents the first step in doing so.
SECTION I
REVIEW OF RELATED LITERATURE

The mission of this dissertation is to tell a story about the interaction between military service, the human trauma response, and individual foreign policy preferences. By extracting the lessons of disciplines including political science, psychology, economics, physiology, sociology, psychiatry, and history and attempting to mitigate their respective limitations, I will construct a series of hypotheses designed to assess how bodily responses to military service-related experiences may predict foreign policy preferences. I evaluate said hypotheses via a complex plausibility probe of surveys and time-series data assessing military service, trauma, and policy preferences. Section I considers the multitudinous bodies of literature necessary to establish such a theory.

Part 1 of the literature review—the consideration of research on the impact of military service—considers what current research exists connecting military experience and changes in veterans, including a review of social theories and empirical tests of the impact of service. Though a substantive amount of research exists, most results suggest little to no clear pattern of military service’s influence on any significant outcomes—other than combat experience, which does demonstrate a strong correlation with a number of future health variables. Yet, though several authors offer empirical evidence that the trauma of combat has a dramatic effect on its participants, no study has yet to advance a theory of the mechanisms through which combat causes such health effects; they stop at the proverbial water’s edge of theorizing. The same is true for deducing
what such effects mean for the overall behavior of veterans. The extremely wide gap in understanding left by this body of research is the root of this dissertation.

Part 2 continues by examining one of the distinct research fields that may be essential for filling such a gap, the study of the human stress response. This research examines both the processes through which individuals process stress, and what happens when trauma dysregulates the natural operation of those processes. It finds a number of validated changes that occur in the mind, brain, and body following dysregulation of the body’s natural stress response; however, it makes no attempt to extend those changes to the person’s interaction with the world around them. As this review shows, it remains an isolated body of medical research that does not readily lend its findings to other fields.

Finally, relative to what motivates the formation and selection of foreign policy preferences, Part 3 of Section I summarizes research on individual decision-making in political science. This review examines arguments in favor of the individual having a determinative role in the international system, and focuses on the methods through which they form their preferences and select their behaviors. It surveys the powerful research paradigm of rational choice, in addition to examining equally thorough — those less widely-cited — research on the role of emotions in decision-making. It concludes with a review of attempts to integrate these rational and emotional models, ultimately exploring the dual systems theory of decision-making. The survey reveals that individuals generally hold a unique and consistent preference frame from which they make decisions, composed of both affective and cognitive elements that sequentially
eliminate choice options and lead individuals to a decision. Yet, dual systems theory has yet to be convincingly integrated into political decision-making; as a body of work, political science has yet to fully integrate emerging decision science lessons into its overall models of decision-making.

The literature review concludes by summarizing the lessons of these three bodies of literature and the questions that remain. It delineates the specific insights and limitations of Parts 1, 2, and 3, and their clear relationships with each other to make a fundamental argument: by not understanding and integrating the lessons from these three bodies of literature, we are missing an entirely new body of research. Section I then concludes with a transition to Section II, A Theory of Military Combat Experiences and Foreign Policy Preferences.
SECTION I

PART 1

Research on the Effects of Military Service

In order to better understand and specify the relationship between military service and future foreign policy preferences, it is first essential to understand existing research on the impact of such service. Fortunately, the manner and degree to which military service changes its servicemembers is a longstanding question across several disciplines. Unfortunately, because no field claimed ownership over such a diverse issue, no integrative research plan ever emerged; instead, a horizontal and generally disconnected collection of correlative research dominates the literature.

Part I of the literature review surveys this existing literature on military service and changes in veterans. It first examines the early research attempts to establish a theory of military socialization as an explanation for future change, and considers some of the critiques that emerged in response. It then proceeds to detail the vast number of statistical studies correlating military service and specific outcomes that followed across both conscription and volunteer force eras, and considers some of the inherent shortcomings of that research. Finally, Part I concludes by summarizing the overall insights and limitations of this body of literature.¹

¹ The theories and empirical tests surveyed in this Section (and the dissertation more broadly) generally refer to the U.S. military specifically; other countries’ servicemembers are only integrated in occasional supporting data. Though a number of studies exist examining the socialization and processes of military service beyond the
A Social Theory of the Effects of Military Service

Early attempts to study the effects of military service focused on understanding how the military may socialize its participants, such that later attitudes, beliefs, and behaviors would be a product of its socializing force. The predominant theory of this type came from life-course research. Utilized across sociology, psychology, criminology, and political science during the latter half of the twentieth century, the ‘life course’ as defined by Elder and Rockwell (1979) represents a collection of discrete phases in life in which particular experiences shape and ultimately alter the course of an individual’s life trajectory. Military service is one of the central formative experiences examined by such research because of its numerous interrelated relationships with professional, personal, and social role development.

Scholars conceptualized the formative process of military service using the idea of ‘total institutions’ as defined by Goffman (1961). Institutions that are ‘total’ in nature are those that breakdown the traditional societal barriers between sleep, work, and play; and in which “all aspects of life are conducted in the same place and under the same single authority... each phase of the member’s daily activity will be carried out in the immediate company of a large batch of others, all of whom are treated alike and required to do the same thing together... all phases of the day’s activities are tightly scheduled, with one activity leading at a prearranged time into the next... [and] the

U.S. system, there is likely significant variation in how ‘total’ those institutions may be—such that limiting the discussion to the U.S. military is appropriate.
contents of the various enforced activities are brought together as parts of a single overall rational plan purportedly designed to fulfill the official aims of the institution” (Goffman, 1961, p. 314). There is a distinct division between supervisors and participants in which mobility is restricted, information about one’s own future within the total institution is often withheld by the institution, the institution demands work motives different than most of society-at-large, and there are real or symbolic barriers between the total institution and the outside world (Goffman, 1961). As a participant becomes inculcated in the total institution, its values and preferences in turn become inculcated within them; individuals adapt to the institutional control by adopting its rules and regulations.

Among several scholars the concept of the military, particularly in the United States, was deemed a natural analogical extension of this ‘total institution’ idea (Dornbusch, 1955; Lahav, Benzion, & Shavit, 2011; Zurcher, 1965). It necessarily alienates the individual from society at large via highly restrictive periods such as basic training and boot camp, whereby individuals are required to largely cut off relations with anyone outside the institution and subscribe to the “presenting culture” of the military (Goffman, 1961, p. 317; see also Becker, 2013), and allow the service to ‘de-civilianize’ and ‘role-dispossess’ the incoming individual (Zurcher, 1967, p. 85). As Dyer (1985) summarized, the result is “the destruction of an individual’s former beliefs and confidence, and his reduction to a position of helplessness and need” (p. 111). Furthermore, researchers argued that the military institution promoted isolation via (1) demanding acquiescence to the barracks, vessel, and base structure whereby
servicemembers maintain residence and employment on official military installations that stock their provisions, and (2) potential deployment whereby servicemembers are sent to isolated installations anywhere in the world (Caforio, 2006). There is also complete communicative isolation; it formally and informally controls the access to information that its members are allowed, across a spectrum ranging from encouraging minimal family contact and/or fraternization with nonmilitary personnel to imposing a strict series of embedded norms declaring certain attitudes and behaviors acceptable (Shils & Janowitz, 1948). Finally, there is a strict reward/punishment system—uniquely defined by promotion board and court martial structures—that further reinforced the total institution argument.\(^2\) In sum, the military was theorized to be formative because of its ability to be a total institution—to wholly socialize its members.

As far as what that socialization looks like, Bachman, Sigelman, and Diamond (1987) suggest that the widespread agreement among scholars was that “military personnel tend to be above average in nationalism, conservatism, and traditionalism. They have also been characterized both in positive terms such as professional, patriotic, and altruistic, and in more controversial terms such as authoritarian, militaristic, and aggressive” (p. 169). Such attitudes were labeled as “no surprise” given that each seemed an inherent, functional characteristic of anyone assigned the responsibility of

\(^2\) Some elements of military service also draw on non-military social theories of explanation. For instance, given the causal effect that education commonly exerts on future earnings, a number of scholars utilized human capital theory to explain how military service (by virtue of the professional and technical skills it cultivates) indirectly improves the overall occupational achievement of individuals (Fredland & Little, 1980; Goldberg & Warner, 1987; Villemez & Kasarda, 1976).
state-sanctioned violence (Bachman, Freedman-Doan, Segal, & O'Malley, 2000, p. 562). In particular, early academic studies emphasized the expectation that such a total institution would impart authoritarianism on servicemembers as a consequence of the highly structured nature of the organization; for anyone who adhered to such a highly structured organizational culture, “this would automatically mean socialization toward the authoritarian posture” (Lippert, Schneider, & Zoll, 1978, pp. 266-267). More recent research emphasizes how the military “makes specific efforts to inculcate its members with patriotism” (Teigen, 2007, p. 414).

Over time, researchers redefined the expected magnitudes of the military socialization hypothesis based on point of entry. Their work argued that when the point of entry—that is, the time at which an individual became a part of the military total institution—occurs during late adolescence (18-20 years), it would be expected to amplify the amount of socialization and change that would occur in individuals. They based this argument on theories of the life course that suggested the tumult of the transition from adolescence to adulthood allows for social norms to become more ‘sticky’, and that such individuals have no prior experience to compare the norms to, thereby improving their overall attitude toward (and reducing their overall resistance to) the change (Elder, 1998). In the same vein, researchers posited that the later that an individual attained membership in the armed services, the smaller the change would be, based on the already deeply held preferences and values of an individual (and their expected resistance to the change) (MacLean & Elder, 2007).
Military Socialization: Critique

The broad picture painted by the grand military socialization theory did not hold up well to rigorous empirical testing. Numerous tests showed little to no changes in beliefs or attitudes over time that could be directly attributed to socialization (Bachman et al., 2000; Bachman et al., 1987; Kirkpatrick & Regens, 1978; Lovell & Janowitz, 1964). As these results fell flat, scholars slowly began to challenge the idea that the U.S. military effectively represents a total institution. After all, such a definition was originally designed to encapsulate something like a prison or asylum; unlike those institutions, the military—particularly as it continued to modernize—offered a variety of individual freedoms and opportunities for differentiation, and at most only represented ‘total institution’ characteristics in finite environments like boot camp or the service academies (Jenning & Markus, 1977; Kimmel, 2000; Lovell & Janowitz, 1964; Lovell & Stiehm, 1989; Rosa & Stevens, 1986; Stevens, Rosa, & Gardner, 1994; Wilson, 2008).

However, beyond schools of thought debating the term’s applicability, a more problematic critique of the total institution socialization theory emerged contending that no matter how many elements of military service echoed total institutional characteristics, the theory might never overcome the fundamental methodological issue of distinguishing self-selection from causation (Caspi, 2004; Heckman, 2005; MacLean & Elder, 2007; Moffitt, 2005; Winship & Morgan, 1999). There were few observed differences in the preferences and attitudes of military personnel because, by this critique, the type of people who participated in the military already held goals and
attitudes similar to those of the institution (Bachman et al., 1987; Dorman, 1976). In fact, as MacLean and Elder (2007) highlight, the self-selection concerns are twofold—people both choose to volunteer for the armed services and/or select the roles they wish to apply for, and the institution itself determines which recruits to accept or reject in the service or specific roles based on physical and mental characteristics. By this account any militaristic, conservative, or aggressive minds that emerge from military service likely have some other societal explanation; military service is merely a manifestation of already formed beliefs. In response, supporters of the original theory explained this discrepancy in results as a product of what they called military ‘anticipatory socialization’ (Lucas, 1971). Defined by Merton (1957) as the process by which individuals alter their beliefs and preferences to match the perceived beliefs and preferences of a group they anticipate joining, anticipatory socialization allowed for the observed self-selection effects while retaining a determinative, if unobserved, role for military service. Yet in doing so, it left theorizing on the social effect of military service at a standstill: if the effect of military service was present but nearly impossible to measure, little could be done to truly understand its effects.³

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³ Notably, distinguishing the social effects of military service could be theoretically be done through an elaborate difference-in-difference design, comparing surveys over time of individuals who do not apply to serve in the military, who do apply and are not selected, and who do apply and are selected. The lack of such evidence is not meant to suggest the endeavor is impossible, but rather that the undertaking has thus far been considered prohibitively costly to perform.
Quantitative Research on the Effects of Military Service

As military socialization theories proved weak in empirical tests across the 1950s and 1960s, research examining the potential influence of military service faced a stark reality: the United States was in the midst of wartime eras, and therefore it offered thousands of potential study subjects both in active duty servicemembers and returning veterans. More than 60% of U.S. men born between 1928 and 1933 were veterans by age 35; for those born by 1950 the percentage still remained around 40% (Xie, 1992). Thus, arguing that war was “far too varied an activity to allow easy sociological generalization” and leaving military socialization theories behind, scholars began to migrate toward small- and large-\(n\) quantitative research (Modell & Haggerty, 1991, p. 219). Some scholars loosely accepted the general socialization theory while others explicitly neglected theory, but all pushed forward to create a plethora of correlative studies in the story of military service’s impact on veterans. Two main cohorts of research emerged: conscription-era studies examining World War II (WWII), Korean War, and Vietnam War veterans; and All-Volunteer Force (AVF) era studies examining veterans of the Cold War, first Gulf War, Operation Iraqi Freedom (OIF), Operation Enduring Freedom (OEF), Operation New Dawn/Operation Resolute Support, and more.\(^4\)

\(^4\) In dates, the conscription era is defined as extending from the 1940 Selective Training and Service Act until the advent of the All-Volunteer Force in 1973. The volunteer era is defined as extending from 1973 until present day.
Conscription-Era Studies

The number of mechanisms devised to capture military service and its effects within cohorts of conscription-era veterans was enormous. The bulk of such research explores the observed impact of military service as a general experience on four outcomes: health and home life, socioeconomic outcomes, criminal careers, and attitudes about war.5

The vast majority of quantitative research undertaken on conscription-era veterans was designed to capture observed differences in health, and thus mostly narrowed its focus to combat veterans, examining the prevalence of symptoms related to various conditions of shell shock, combat fatigue, and post-traumatic stress (see Blackburn, 1983; Blanchard, Kolb, Pallmeyer, & Gerardi, 1982; Dean, 1997; Engdahl, Eberly, & Blake, 1996; Frye & Stockton, 1982; Goodwin, 1980; Kaylor, King, & King, 1987; Shipko, Alvarez, & Noviello, 1983; van der Kolk, Blitz, Burr, Sherry, & Hartmann, 1984). The National Vietnam Veterans Readjustment Study was the seminal study in establishing a benchmark for what effect combat service had on post-traumatic stress disorder (PTSD), finding that approximately three of every ten male Vietnam veterans experienced PTSD symptoms at some time following their combat service—a number estimated to be roughly six times higher than for combat veterans who served in other wars up until that point, and twelve times higher than for nonveterans (Kulka et al.,

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5 Nearly all studies focus on World War II and Vietnam veterans; some suggest this may be because Korean War veterans were roughly equated to WWII veterans in experience by researchers (Ruger, Wilson, & Waddoups, 2002).
As the authors noted, it was “clear that exposure to war zone stress makes a considerable contribution to the development of PTSD in war veterans that is independent of a broad range of potential predisposing factors” (Kulka et al., 1988, p. 40). In turn, war-related PTSD was highly correlated with a number of other associated health issues among Vietnam veterans, including physical health issues (Zatzick et al., 1997), lower cognitive functioning (Barrett, Green, Morris, Giles, & Croft, 1996) and increased use and abuse of drugs and alcohol (Beckham et al., 1997; Breslin, Kang, Lee, Burt, & Shepard, 1988; MacLean & Elder, 2007). Fewer studies exist for World War II and Korean War veterans, because the Vietnam period marked the official mainstreaming of PTSD diagnoses and studies. Yet, a number of researchers revisited these subject pools and estimated high rates (approximately 30-70%) of previously undiagnosed PTSD symptoms among WWII veterans generally (Eberly & Engdahl, 1991; Engdahl et al., 1996; Molinari & Williams, 1995) and among former prisoners of war (Gold et al., 2000; Speed, Engdahl, Schwartz, & Eberly, 1989). They also found that war imagery, one of the central symptoms of PTSD, remained readily accessible for older veterans (Rosen, Fields, Hand, Falsettie, & Van Kammen, 1989).

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6 Importantly, PTSD was only officially added to the Diagnostic and Statistical Manual III (DSM-III) in 1980. As such, many of the studies of military populations included here vary in how they assessed overall PTSD symptomatology, whether clinically assessing new PTSD symptoms in real-time after the advent of the official diagnosis, clinically assessing existing PTSD symptoms in populations studied prior to the official diagnosis, or estimating PTSD according to symptoms reported prior to the advent of the official diagnosis.
Also within the health research, generally high mortality rates were observed for Vietnam veterans, who were more likely to die from car accidents, accidental poisonings, and suicides or homicides following their service (Anderson et al., 1986; Bailey, Baron, & Basanao, 1986; Kogan & Clapp, 1985; Lawrence et al., 1985; Watanabe & Kang, 1996). In general, those veterans who were diagnosed with PTSD were more likely to die than other veterans fifteen years after that war’s end (Elder, Shanahan, & Colerick Clipp, 1997; MacLean & Elder, 2007). World War II combat veterans were also more likely to have declining health or pass away within fifteen years of the war’s conclusion (MacLean & Elder, 2007). A clear pattern emerged suggesting that combat veterans suffered adverse health effects as a consequence of their service—even if the question of ‘why?’ went unanswered.

A number of studies also examined personal relationships as an indicator of health of the home life. Much like the physical health studies, researchers primarily focused on assessing the marital status of Vietnam veterans. Over all conscription-era wars, combat maintained a large and statistically significant negative effect on marriage duration (Ruger et al., 2002). Specifically, combat exposure was consistently correlated with an increase in reported marital difficulties like separation, divorce, and domestic violence (Frey-Wouters & Laufer, 1986; Gimbel & Booth, 1994; Jordan et al., 1992; Laufer, Brett, & Gallops, 1985; Orcutt, King, & King, 2003; Pavalko & Elder, 1990; Ruger et al., 2002; Savarese, Suvak, King, & King, 2001). However, some results found no difference in divorce rates among Vietnam veterans, non-Vietnam veterans, and nonveterans (Call & Teachman, 1991; Card, 1983). For earlier wars, World War II
veterans were found to disproportionately contribute to a general postwar rise in divorce rates relative to nonveterans (Pavalko & Elder, 1990), though other studies found that WWII veterans faced lower rates of marital dissolution after the end of the war (Ruger et al., 2002). Interestingly, some of the only research on Korean War veterans’ marriages found that such veterans had a 26% higher risk of marital dissolution than nonveterans, and were more than twice as likely to divorce as WWII veterans (Ruger et al., 2002). Yet, the significant number of external variables that might influence overall marital satisfaction outside of military factors—and the varying levels of inclusion and types of operationalization utilized by many of these studies—meant that the relationship between combat service and marital status remained inconclusive.

Beyond studies of physical and home health, scholarly interest in measuring the effects of conscription-era service focused on socioeconomic outcomes—how such service changed occupational earnings, educational development, and overall job satisfaction (MacLean & Elder, 2007). The results were mixed, though plentiful in number. Several authors found a positive correlation between conscription-era military service and higher earnings over the life-course than nonveterans (Angrist & Krueger, 1994; Browning, Lopreato, & Poston, 1973; De Tray, 1982; Fredland & Little, 1980; Martindale & Poston, 1979; Villemez & Kasarda, 1976). Yet some studies also found that WWII veterans on average had more skillsets than their nonveteran peers to begin with, suggesting a muted influence on earnings on the part of the military (MacLean & Elder, 2007). Other studies focusing on social inequality and socioeconomic attainment emphasized an educational impact—for instance, finding that Vietnam veterans were
less likely than nonveterans to hold college degrees (Mazur, 1995) and that, unsurprisingly, veterans across all eras who utilized military educational benefits (from the 1944 Servicemembers’ Readjustment Act to the commonly known G.I. Bill) attained more education and higher earnings than veterans who did not take advantage of military educational benefits (Angrist, 1993; Sampson & Laub, 1996; Stanley, 2003).

While most of these studies considered servicemembers as a single group, for socioeconomic studies focusing specifically on combat veterans there are mixed results; while most studies found that Vietnam veterans experienced lower overall socioeconomic attainment if they served in combat (Prigerson, Maciejewski, & Rosenheck, 2002; Savoca & Rosenheck, 2000), some did find that veterans demonstrated no lower or higher occupational status or job satisfaction than their nonveteran peers (Vogt, King, King, & Savarese, 2004).

Two other niche research fields also contributed to the quantitative research tradition, albeit with smaller impact than studies of health or socioeconomic outcomes. One such field examines the relationship between military service and the future criminal activity of veterans, occasionally as related to some of the mental health outcomes previously mentioned. For Vietnam veterans, in addition to findings from Boulanger (1986) and Yesavage (1983) showing that Vietnam combat veterans were more violent than non-combat veterans, combat veterans were found to be more likely to have higher nonviolent crime arrest rates than non-combat veterans at the time (Beckerman & Fontana, 1989; Resnick, Foy, Donahoe, & Miller, 1989). Across all veterans, they were at least as likely to later come into police contact as standard
civilians (Bouffard, 2003; Bouffard & Laub, 2004). For earlier veterans that were part of WWII, effects of military experience appeared bimodal: while some previous offenders were distinctly less likely to commit crimes after their time in the military versus other criminals (Laub & Sampson, 1995; Mattick, 1960), other studies found that criminal behavior among previous offenders continued relatively unchanged after military service (Hakeem, 1946; Laub & Sampson, 1995).

The second smaller body of research to contribute to the quantitative understanding of military service’s effects focused on attitudes about war, foreign policy, and international relations. The outcome that garners the most specific attention throughout the conscription-era research (as a likely product of much of the socialization research) is the development of authoritarian attitudes. Utilizing measures that evaluate attitudes about demonstrations, feelings toward obedience, and feelings toward police, a handle of scholars found modest increases in general authoritarian attitudes over time among those who had WWII and Vietnam military service (Christie, 1952; Dorman, 1976; Eckhardt & Lentz, 1967). However, per the aforementioned socialization critiques, these studies were unable to sufficiently distinguish the effect of self-selection over causation, and a number of additional studies emerged finding little or no effect of military service on general authoritarian attitudes (Campbell & McCormack, 1957; French & Ernest, 1955; Hollander, 1954; Schreiber, 1979). Similar to research on authoritarian beliefs, some early studies on foreign policy and attitudes about war found no effect of general military service (Segal & Segal, 1976), though some found that WWII veterans were significantly less likely to favor the U.S. playing an
active role in world affairs than nonveterans and that conscription-era veterans were unlikely to favor more spending on foreign aid (Schreiber, 1979). Vietnam veterans were more likely to expect the U.S. to be at war within ten years (Schreiber, 1979), and when surveyed during the war were statistically more likely to seek an ‘all-out pursuit’ of the war than nonveterans (Bachman & Jennings, 1975). More recently, within political science Gelpi and Feaver (2002) found strong evidence that when the U.S. initiates the use of force, a higher proportion of veterans in the elite levels of political decision-making circles is strongly associated with greater levels of force, while recent research from Horowitz and Stam (2014) demonstrated that non-combat veterans were more likely to initiate interstate disputes. These studies revealed a wide-reaching, if disjointed, relationship between military service and foreign policy issues.

Less evidence in favor of specific political affiliations for conscription-era veterans is available, largely because of the dominant perception that each servicemember was “an efficient, disinterred, nonpartisan administrator and diplomat” (Brown, 1979, p. 388). Some surveys found a majority of respondents identifying as generally conservative, though scholars were careful to note that “the military establishment of the United States was relatively open-minded and self-critical,” such

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7 Interestingly, Gelpi and Feaver (2002) explicitly indicate that they suspect socialization-specific mechanisms are at work in obtaining these results (contrary to self-selection), but are forthright in recognizing that at the point of research they cannot offer mechanisms through which socialization may exert an effect. As specified, this reflects the overall trend of quantitative research in measuring the impact of military service: a general theoretical relationship is suspected, but only a specific effect is measured.
that no obvious bias emerged in a political party favoring the military or the military favoring a political party (Janowitz & Moskos, 1979, p. 205). That said, a series of the Foreign Policy Leadership Project surveys (Holsti & Rosenau, 1999) found that by the end of the 1970s (i.e., the shift from the conscription era to the AVF-era) there was a shift in military officers identifying themselves as specifically Republican rather than conservative—however, there was no clear evidence that this shift had any bearing on preferences or decision-making beyond votes for candidates like President Reagan versus President Carter (Holsti, 1998; Janowitz & Wesbrook, 1983).

In sum, across the plentiful health, socioeconomic, criminal, and international affairs research on the effects of military service, no general pattern of military service emerged. It seems, from these samples, as if general military experience or specific combat experience might exert a determinative effect on the health of conscription-era veterans. Yet, by neglecting any comprehensive theorizing of such an effect, such studies did little more than provide interesting hypotheses for continued research.

All-Volunteer Force Studies

After the conclusion of the Vietnam War, hostilities requiring uniformed troops were more limited in scope and number, and as a consequence much of academic research continued to focus on longitudinal analyses of Vietnam veterans. However, following the end of the Cold War, the first Gulf War, and later the initiation of wars in Iraq and Afghanistan, a number of researchers sought to capture the effects of military
service in the AVF era. Contrary to the diversified bodies of conscription-era research, health studies dominated nearly all of this research.

Greater advances in the medical understanding of war-related PTSD, traumatic brain injury (TBI), and their symptoms—along with greater survey instruments and technologies to assess such diagnoses—are primarily responsible for the large number of published research on the implications of AVF-era veterans’ service (Tanielian & Jaycox, 2008). General research shows that more than 26% of returning OEF/OIF veterans may have some sort of mental health condition(s) following service (Hoge et al., 2004; Tanielian & Jaycox, 2008), but this evidence extends across these numerous possible diagnoses (and their comorbidity). One of the central pillars of evaluations of mental health in AVF-era veterans surrounds post-traumatic stress responses, specifically the classification of PTSD. Rates of PTSD for Gulf War I veterans have been consistently reported between 1.9% and 13.2% (Engel et al., 1999; Gray, Reed, Kaiser, Smith, & Gastañaga, 2002; Kang, Natelson, Mahan, Lee, & Murphy, 2003; Stretch et al., 1996), with some studies finding generalized rates similar to civilian populations at 6-7% (Wolfe, Erickson, Sharkansky, King, & King, 1999). Meanwhile, similar rates for OEF and OIF veterans continue to be estimated at wildly variable rates ranging from 1.4% to 60% (Fulton et al., 2015; Hoge, Auchterlonie, & Milliken, 2006; Hoge et al., 2004; Seal, Bertenthal, Miner, Sen, & Marmar, 2007). Indeed, this wide range comes across a number of incongruent findings. One recent meta-analysis suggested that based on commonalities among studies, the generalized PTSD prevalence among OEF/OIF veterans is estimated around 23% (Fulton et al., 2015). Some research has found higher
rates of PTSD specifically in combat units (approximately 13.2%), when compared to samples of total deployed forces (approximately 5.5%) (Kok, Herrell, Thomas, & Hoge, 2012). However, another set of research found PTSD symptomatology to be more prevalent among veterans when compared to active duty servicemembers (Dursa, Reinhard, Barth, & Schneiderman, 2014; Ramchand et al., 2010), even though upwards of 22% of VA-screened veterans between 2002-2008 were diagnosed with PTSD (Seal et al., 2009). Recently, several authors have introduced the important explanation for many of these variable findings using longitudinal studies that find at least four general trajectories of PTSD symptomatology—specifically involving delayed-onset, improving, chronic, and resilient PTSD trajectories (Berntsen et al., 2012; Bonanno et al., 2012; Porter, Bonanno, Frasco, Dursa, & Boyko, 2017). Related to service, combat trauma exposure and sexual trauma have been shown to be the strongest predictors of overall PTSD symptomatology (Hoge et al., 2004; Jakob, Lamp, Rauch, Smith, & Buchholz, 2017; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995).

Furthermore, following increased reliance on National Guard/reserve units in combat over the course of the AVF-era conflicts, some authors found higher overall rates of PTSD (and more severe stress reactions) among such units (Helmus & Glenn, 2005; Stanley & Larsen, in press; Milliken et al., 2007).

This is a key distinction—while the frequency and intensity of combat exposure is the most commonly thought of (and one of the most commonly documented) sources of specific military service-related PTSD, military service-related sexual trauma shows significant association with service-related PTSD as well. Military-context sexual assault rates among male veterans have been reported to be as high as 12%, while up to 33% of women have reported attempted/completed rape during military service (Jakob et al., 2017; Turchik & Wilson, 2010).
Studies of TBI only defined this unique symptom within the past several years and therefore are generally limited to OEF/OIF veterans’ studies, with more than 370,000 veterans diagnosed with TBI since 2000 (Defense and Veterans Brain Injury Center, 2017) — and given that 25% of medical evacuations from OEF/OIF operations were head or neck injuries, there is belief among scholars that the number is likely much higher (French & Parkinson, 2008; Okie, 2005; Xydakis, Fravell, Nasser, & Casler, 2005). Indeed, TBI is known as the “signature injury” of both OEF/OIF combat operations (Silver, McAllister, & Yudofsky, 2011, p. 199; see also Keltner & Cooke, 2007; Okie, 2005). Samples of Army Brigade Combat Teams revealed approximately 22.8% of soldiers experienced TBI (Terrio et al., 2009). Among those servicemembers who experienced TBI across all branches, 89% were diagnosed with a subsequent psychiatric condition (Taylor et al., 2012), reflective of the upwards of 80% of VA TBI screenings that demonstrated comorbid psychiatric diagnoses (Carlson et al., 2010). More recently, a random sample of post-9/11 veterans revealed approximately 17.3% met the full criteria for TBI during their military service, with approximately half the sample having multiple head injuries — and also showing higher rates of PTSD, depression, and suicidal ideation (Lindquist, Love, & Elbogen, 2017). The number of mild concussive injuries, less severe but with similar potential to impact mental health, is also estimated to be high in OEF/OIF combat veterans; the U.S. Army Surgeon General estimated that 10% to 20% of veterans had at least some sort of mild-TBI experience while deployed (Bradshaw, 2008). Many of the studies investigating TBI prevalence find that younger
male enlisted servicemembers were most likely to experience probable TBI, largely due to increased combat intensity exposure (Hoge et al., 2008; Tanielian & Jaycox, 2008).

Though the recency of these conflicts and the transition to post-combat operations has limited overall morbidity studies of these veterans, the influence of military service on suicide rates has recently been a ‘national priority’ and thus a special interest research topic in the AVF-era health literature (McCarthy et al., 2009). Typically, suicide rates in military and civilian populations decrease during periods of war, based on theories that increased patriotism, collective spirit, and material rewards from heightened production levels offer individuals the sense of belonging necessary to preempt suicidal ideation (Rojcewicz, 1971; Rothberg & Jones, 1987). Yet, recent and more rigorously collected data suggests this is not the case. A dramatic increase in military suicide occurred after 2001; military suicide rates that had previously been 50% below comparable civilian rates began to exceed the suicide rate in the civilian population by 25% (Bush et al., 2013; Nock et al., 2013). Yet, this statistic’s relationship with combat is unclear. Initial studies report that the risk of suicide for all OEF/OIF veterans is not significantly different from nonveterans, but that former active duty veterans and those diagnosed with a mental disorder are more susceptible to suicide than non-active or non-diagnosed veteran populations (Kang & Bullman, 2009).

However, other data offer that roughly 40% of military suicides are committed by servicemembers who never deployed in support of combat missions (Bryan, Cukrowicz, West, & Morrow, 2010; Schoenbaum et al., 2014). Indeed, multiple studies have found “no association among deployments, combat exposure, and death by
suicide” (Bryan, Hernandez, Allison, & Clemans, 2013, p. 73), including a recent study among all 3.9 million U.S. military personnel who served between 2001-2007 that found no association between deployment and suicide (Reger et al., 2015). There is evidence within military populations that professional experience and familiarity with firearms—clearly service-related features, irrespective of combat deployments—might explain the suicide rate. For example, the level of firearm storage moderated the relationship between ideation and self-reported likelihood of engaging in future suicide attempts among military personnel (Khazem et al., 2015). More generally, prior experience firing guns has been shown to uniquely cultivate the capabilities necessary to execute suicide (Anestis & Capron 2017; Stanley and Larsen in press; Houstsma, Butterworth, and Anestis 2018), suggesting that non-combat related features of military service may influence this complicated relationship.

At the same time, a longitudinal study with current and former U.S. military personnel from all service branches—including both active and reserve forces—found that the many of the mental health outcomes noted within service populations (e.g., depression, manic-depressive disorder, heavy/binge drinking and alcohol-related problems) were all significantly associated with increased risk of suicide, while military-specific variables were not (LeardMann et al., 2013). An additional study of active-duty U.S. Army soldiers found that across five mood disorders—pre-enlistment panic disorder, pre-enlistment PTSD, post-enlistment depression, and both pre- and post-enlistment intermittent explosive disorder—each significantly predicted post-enlistment first suicide attempts (Nock et al., 2014). As such, suicide remains a distinctly
powerful epidemic within the services, but generally remains so irrespective of clear military-specific factors (see Stanley & Larsen, in press).\textsuperscript{10}

In addition, much like veterans of the conscription-era, AVF veterans reported a number of physical health consequences over time—for instance, Gulf War I veterans demonstrated a number of physical symptoms as a result of exposure to nerve/anti-nerve gas agents and the inhalation of combat-related smoke (Costa & Amdur, 1996; Gunderson, Lehmann, Sidell, & Jabbari, 1992), and increased onset or frequency of smoking (Forgas, Meyer, & Cohen, 1996). Similarly, OEF/OIF veterans showed an increase in respiratory illnesses (Sanders et al., 2005; Szema, Peters, Weissinger, Gagliano, & Chen, 2010) following their service and smoking/drinking behaviors, including heavy alcohol consumption and illicit drug use (Bray & Hourani, 2007; Green, Emslie, O’Neill, Hunt, & Walker, 2010; Jacobson et al., 2008; Kirby et al., 2008; McDevitt-Murphy et al., 2010; Straits-Troster, Calhoun, Kudler, & Jones, 2007). Furthermore, research finds inappropriate aggressive behavior and violent outbursts (Braswell & Kushner, 2012; Green et al., 2010; Hoge, Castro, & Eaton, 2006), domestic violence

\textsuperscript{10} At this juncture, it bears noting that a separate niche field of research emerging within studies of AVF-era veterans’ mental and physical health focuses specifically on non-deployment related (and in some cases, non-service related) risk factors that, independently or when interacting with military service, may play significant roles in motivating major mood disorder symptomatology. For example, childhood experiences and the family environment (Blosnich, Dichter, Cerulli, Batten, & Bossarte, 2014; Van Voorhees et al., 2012), coping strategies (Billings & Moos, 1981; Pietrzak, Russo, Ling, & Southwick, 2011), and social support (Possemato, McKenzie, McDevitt-Murphy, Williams, & Ouimette, 2014) are all factors that show unique impact in military populations. However, because such research does not aim to specifically define the impacts of military service, it is not included in this literature review section of the dissertation—instead, it is considered in Section II’s theoretical discussion.
(Hoge, Castro, et al., 2006), and physical/sexual harassment and abuse of fellow servicemembers (Nillni et al., 2014; Street, Gradus, Giasson, Vogt, & Resick, 2013) among these cohorts. In line with these findings, combat experience in Afghanistan and Iraq has been significantly linked to decreased marital satisfaction, increased intention to divorce, and increased spousal abuse (Hoge, Castro, et al., 2006; Stanley & Larsen, 2017). More recent studies of veterans with active-duty military service also find general increased physical degradation compared to civilian counterparts, even when controlling for outside variables like income, marital status, or health-related behaviors like alcohol/tobacco use (Teachman, 2011).

An outcome peripherally related to the influx of research on mental health outcomes particularly in the AVF era has been the unique research program on ‘moral injury’ (Litz, 2012; Sherman, 2015). In this growing subset of the literature, scholars study the specific effects of moral and ethical dilemmas in a warfare context, focusing on how such unique military experiences “inflict damage to moral belief systems rather [than] by threatening personal life and safety” (Nash & Litz, 2013, p. 365). Moral injury derives from “perpetuating, failing to prevent, bearing witness to, or learning about acts that transgress deeply held moral beliefs and expectations,” and thus “is not merely a state of cognitive dissonance, but a state of loss of trust in previously deeply held beliefs about one’s own or others’ ability to keep our shared moral covenant” (Nash & Litz, 2013, p. 368). This suggests a specific, separate mechanism that complements the quantitative assessments of combat-related psychological distress explored above—a sentiment echoed in a qualitative study with DoD and VA healthcare providers, who
universally concurred that common post-combat diagnoses like PTSD did not wholly capture the unique distress of violating one’s own moral codes (Drescher et al., 2011; Nash & Litz, 2013). Indeed, most moral injury studies introduce it as a mediating factor between combat exposure and the common psychological diagnoses explored above, finding that moral injury and its mechanisms among those who committed the act of killing significantly mediated the relationship between combat trauma and major depressive disorder/PTSD (Currier, Holland, Drescher, & Foy, 2015; Maguen et al., 2010; Maguen et al., 2011; Marx et al., 2010), and that moral injury is associated with increased severity of suicidal ideation in some samples (Bryan, Jennings, Jobes, & Bradley, 2012; Currier et al., 2015; Maguen et al., 2011).

Beyond the dramatic proliferation of research on physical and mental health outcomes, studies connecting the influence of military experience to other outcomes for AVF-era veterans are lesser in breadth and significance. Some research echoes that of conscription-era veterans by finding that servicemembers who entered in early years of AVF implementation participate in a general increase in criminal offenses versus nonveterans, and that those who were delinquents prior to joining the armed services were again likely to commit crimes once obtaining veteran status (Bouffard, 2005) — though other evidence found that risk of incarceration declined for specific racial groups in that early AVF period (Bouffard, 2005), and across all racial groups for veterans that joined in later years of the AVF’s implementation (Greenberg & Rosenheck, 2009; Greenberg, Rosenheck, & Desai, 2007; Tsai, Rosenheck, Kasprow, & McGuire, 2013). Some research examining labor force participation has found that
veterans (specifically male veterans) outperformed their civilian counterparts on earnings, but by limited amounts (Holder, 2007). Overall, most studies considering non-health related outcomes of military service in the AVF era emphasize the comorbidity of adverse health outcomes and these second-order life outcomes, including studies emphasizing poorer financial well-being (Elbogen, Johnson, Wagner, Newton, & Beckham, 2012) and increased rates of homelessness (A National Commitment to Ending Homelessness among Veterans, 2009; Metraux, Clegg, Daigh, Culhane, & Kane, 2013) in AVF-era veterans exhibiting maladjusted mental and behavioral health.

Attitudes, preferences, and affiliations—while important to the central arguments of this dissertation—have only been examined in general terms across a handful of studies. For instance, some AVF-era researchers consider outcomes like political activism and its relationship to military service, highlighting that veterans tend to vote at higher rates than most of their comparable civilian cohorts (80% in some samples) (Urben, 2014)—and in doing so, comprise more than 10% of the voting electorate (Krueger & Pedraza, 2012; Teigen, 2006). Yet, recent research examining specific political affiliations has generally been inconclusive. Though some evidence suggests that veterans are more likely to vote Republican than the general public (Bishin & Incantalupo, 2008), including studies that found Republican preferences among officers (Dempsey, 2010) and that servicemembers identified as Republicans three times more often than as Democrats (Urben, 2014), there has been similar evidence that military service might more actively increase the likelihood an individual votes Democratic (Barreto & Leal, 2007). Some evidence finds significant conservatism and
Republicanism in the AVF-era military (Klingler & Chatagnier, 2014) and more conservatism later in life when controlling for some selection effects (Chatagnier & Klingler, 2016), while others find that though Republicans outnumber Democrats in military service, Democratic identifiers showed slightly more political activism (Urben, 2014). An illustrative case of this complex association comes from Dempsey (2010), who found a majority of conservative/Republican identifications among a survey of servicemembers, but with notable shifts towards liberal/Democratic identifications in recent years. Indeed, additional studies have continued to find little or no relationship between veteran status and vote choice (Teigen, 2007). Additional studies of issue-specific topics like opinions on transgender policy in the military (Ender, Rohall, & Matthews, 2015) find a similarly absent relationship with military service, whereas Lupton (2017) found that veterans in Congress were significantly more likely to vote to increase congressional oversight in the wars in Iraq and Afghanistan.

Perhaps one of the most promising advances in understanding what military service ‘causes’ in AVF-era veterans comes from Jost, Meshkin, and Schub (2017), who provide one of the only recent panel evaluations of how military attitudes shift with service. The authors compared incoming officer candidates at the U.S. Military

11 Relative to general socialization arguments about institutional control, some have questioned whether the relative dearth of evidence on specific political preferences in the military is a feature of leadership’s reluctance to be formally ‘tied’ to one party or another (Dempsey, 2010; Feaver & Kohn, 2001). In other words, the lack of broad-based investigations of political attitudes and preferences among military servicemembers may be because such investigations are actually dissuaded by the services in order to preserve their apolitical character.
Academy at West Point both before and after their initial military training (and then compared this group to comparable civilian attitudes), finding that little direct shift in preferences was directly attributed to simple inculcation to service (Jost et al., 2017). As the authors note, this study focuses on a narrow subset of servicemembers and will yield more robust information over time—however, it provides an interesting AVF-era reply to the aforementioned disinterest in military socialization theories.

Quantitative Research: Critique

Even as divided throughout Part 1, it is clear that the enormous amount of correlative research that exists on the influence of the military on future health and life outcomes is disconnected. This, in turn, is the general critique of the literature on the impact of military service across conflict eras: the varying methodologies used and cohorts studied makes any synthesis of outcomes nearly impossible. Studies of the effects of military service became a veritable grab-bag of survey instruments, measures, methods, and definitions over time, with each study taking its own unique form and calling the comparability and validity of its results into question. Some criticize the inappropriate use (or absence) of control variables or poorly designed longitudinal/comparative studies (Cutright, 1974; Modell & Haggerty, 1991). Meanwhile, the cohorts of subjects studied often differed in whether they held general military training or active duty military experiences; whether they were officers, Reserve Officers’ Training Corps (ROTC) students, reservists, draftees, and/or enlistees; and whether they served during peacetime or specific war contexts (Teigen, 2007).
Unfortunately, even when common variables were used, they were poorly designed, often capturing complex experiences like combat with dichotomous measures or measuring the most influential topic—mental health—using a bevy of self-report measures that are both consciously and unconsciously highly susceptible to manipulation (Atkinson, Henderson, Sparr, & Deale, 1982; Frueh, Gold, & de Arellano, 1997).

Importantly, note that these critiques ring true across health and non-health studies alike; as Chatagnier and Klingler (2016) note in their findings about likely conservatism in AVF-era forces, their earlier studies insufficiently addressed self-selection effects (Klingler & Chatagnier, 2014) — though even their later findings make use of arguably reductive dichotomous measures to capture the complex dynamics of pre-service attitudes. Thus even if there was a theoretical dynamic to be captured within this group, as Bachman et al. (2000) note, “because [the large amount of empirical studies] employed different kinds of samples and measures, it is unclear whether the underlying phenomena have been shifting over time or have remained relatively steady” (p. 563).

Beyond significant methodological critiques, the same overarching critique of both early socialization explanations and conscription era quantitative studies remains: there is no cohesive social theory introduced explaining what about military service causes these adverse mental health outcomes, physical health outcomes, and potential shifts in attitudes and preferences among AVF-era servicemembers. As noted previously, it is common for many of the medical quantitative studies to rely on
correlative outcomes short of in-depth theory-building as a means of assessment. However, those theories could be generalizable to any traumatic experience, and thus still do not offer any insight specific to the life of the servicemember. The closest attempt at building a theory or mechanism comes from the moral injury literature, which at least offers the intermediary explanation that the specific act of killing may motivate foundational shifts in an individual’s ‘moral code,’ such that the result is significant associations with major social and psychological outcomes. However, this literature itself raises a number of methodological critiques, over elements including: the lack of clear definition regarding what makes a ‘moral code,’ what functional mechanism associated with killing violates and reorganizes that code in such a permanent way, and why a moral code’s reorganization translates to enduring psychological and social effects. Indeed, in one of the initial qualitative pilot studies consulting with military healthcare professionals about moral injury, the providers were strong in their sense that moral injury was a needed, but currently inadequate, concept to be considered (Drescher et al., 2011). In short, the causal literature is new, interesting, and welcome in its attempt to better specify the processes through which unique military experience generates deleterious health outcomes; yet, though offering an argument that a unique experience of military service generates deleterious health outcomes, such literature does not yet offer a unique explanation for how that military-specific experience generates those outcomes. Theory, as before, remains elusive.
Lessons and Limitations of Research on the Effects of Military Service

The primary conclusion of research on the influence of military service—that “surprisingly little is known about the short-term and enduring influences of military experience”—is clearly a direct product of its limitations (Elder & Clipp, 1988, p. 133). Due to the invalidated theorizing and the disconnected empirical research, a convincing portrait of military service’s explicit impact on an individual’s life, beliefs, or behaviors is unclear. Does the military socialize its servicemembers, particularly in later decades of the AVF? If so, how? What about the institution leads to a recent increase in suicidal outcomes? What about the institution leads to a possible increase in conservatism? These are just some of the many questions that remain unanswered, even when the few concerted attempts are considered. Put simply, no theory exists that directly addresses how any element of military service convincingly changes some element of an individual’s life. Furthermore, even when some tenuous lessons did emerge, the crippling critique of their poorly designed and/or rarely synchronized methodology means very little can be interpreted or extrapolated from the results beyond singular conclusions from limited studies.

How little we understand about the military’s socio-cultural, physical, mental, and decision-making effects, and how often we allow correlative military research to supersede theoretical development is troublesome. Indeed, the unexplored theoretical territory relative to how military service impacts individuals; the relatively clear correlative changes in health that occur; and the interesting, if limited, results connecting military experience and changes in policy preferences represent a
tremendous theoretical gap that remains to be filled. The literature on military experience and its impact on veterans offers no attempt to explain the relationship that may exist between those three topics. However, by turning to additional bodies of research on trauma and individual political decision-making, insights emerge that suggest a comprehensive theory of combat service and its influence on policy preferences can—and should—be constructed.
Within the limited data on the influence of military experience, a bevy of correlative findings clearly did hint that health outcomes, particularly for combat veterans, may play a key role in determining service’s influence on the individual. In order to better understand the mechanisms through which this might happen, Part 2 of Section I surveys research on how individuals process life-threatening trauma.

Specifically, Part 2 summarizes traditional arguments about individual responses to stress and threat as well as the most currently accepted theory, Polyvagal Theory. It continues with an explanation of how and why individuals may fail to process stress through the processes of the Polyvagal model, and describes the possible dysregulation of the autonomic nervous system (ANS) that can follow. Part 2 concludes by summarizing the lessons and limitations of this research.

**Traditions in Stress Research and Polyvagal Theory**

Research on how the human mind, brain, and body respond to traumatic experiences is rooted in the seminal ‘Fight’ and ‘Flight’ typology pioneered by Cannon (1929). A ubiquitous reference across society today, this original conceptualization of the pan-mammalian response to traumatic events was the first attempt to capture the instinctual, inherited responses the human body experiences when faced with life-
threatening stressors, coined as ‘defensive reactions’ by Pavlov (1926) (see also Scaer, 2005). At its heart, the research illustrated how the activation of the sympathetic nervous system (SNS) within the body’s central nervous system innervates the adrenal medulla’s neurons to release neurochemicals necessary to increase arousal and allow for vigorous response. The process thus involves a number of both energy-mobilizing and energy-consuming processes in the cardiovascular, respiratory, and endocrine systems, including acceleration and deepening of respiration, increased blood flow to muscles and blood sugars, decreased blood flow to the cortex and extremities, and general suppression of physical systems and processes that are deemed nonessential for defense (Cannon, 1939; Charmandari, Tsigos, & Chrousos, 2005; De Boer, Koopmans, Slangen, & Van der Gugten, 1990; Henry, 1992; Ogden, Minton, & Pain, 2006; Scaer, 2005). By Cannon’s version of the argument, the heightened state of the body’s arousal in the face of threat is then mitigated by the parasympathetic nervous system (PSNS), a regulatory system also housed within the body’s central nervous system that unconsciously coordinates physiological processes to return to the steady state of homeostasis (Selye, 1956). This adaptive process triggers the restorative anabolic activity that slows the heart rate, conserves energy, rests organs, and facilitates digestion (Porges, 1992). Together, the two primary branches of the central nervous system work in tandem as the core of the ‘survival brain’—the network rooted in the

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12 As Stanley (2010) notes, ‘stress’ is often based on an external event/circumstance, though the experience itself is a perceived and internal response. Thus in general, note that that this dissertation distinguishes stress (internal) from stressors (external).
brainstem and limbic system that allows for the immediate self-protection and subsequent return to normal functioning that both fight and flight demand (Stanley, 2018, in press).

Cannon set in motion a field of research characterized by continual refinement. Immediately in response to his original fight/flight formulation, physiologist Walter Hess documented what he termed the ‘ergotropic responses,’ a stress response similar to Cannon’s fight/flight typology but with added evidence that the response is mediated in the hypothalamus (a structural precursor to the adrenal medulla) based on experimental research on cats (Hess, 1957; Jacobs, 2001). Similar work by Hans Selye delineated the complex stress reaction process into three phases: the mobilization of the fight/flight response, cessation of that response but continued resistance to stressors, and ultimately, an organism’s cessation of all adaptation to the stressor that Selye deemed the ‘exhaustion’ response (Selye, 1956).

More recently, Stephen Porges provided the most theoretically and technologically nuanced research to date under the definition of Polyvagal Theory. This generally accepted nerve-specific model echoes the typologies and processes of Cannon, Hess, and Selye to trace the mind, brain, and body’s activation processes in the face of perceived threats—arguing that the process by which a body selects responses like ‘fight’ or ‘flight’ has three hierarchically-executed stages (Ogden et al., 2006; Porges, 1992; Porges, 2001, 2011). The first stage is managed by the ventral vagal complex, deriving from the brainstem’s nucleus ambiguus (a set of specialized neurons that determines consciousness/wakefulness via the reticular activating system) (Ogden et
The ventral vagal complex offers the Vagal Brake, wherein the body is able to modulate its own visceral state and in doing so, “enables the individual to rapidly engage and disengage with objects and other individuals” over the course of daily life (Porges 2011, p. 268). Representative of the “most evolutionarily recent and sophisticated” subsystem of bodily response (Ogden et al., 2006, p. 29), this brake underlies the ‘social engagement system’ (SES). Utilizing cortical upper motor neurons that control some of the brainstem’s lower motor neurons, the SES regulates movement of eyelids and the facial, middle ear, mastication, laryngeal/pharyngeal, and head movement muscles—e.g., all of the processes by which people orient to one another, hear and see one another, execute social gestures, express emotion, and ingest their nourishment (Porges, 2003). The SES provides the flexibility necessary for humans to interact socially with their environment without activating Cannon’s intense biological processes necessary for fighting or fleeing; it is the core regulator of everyday arousal, keeping general stressors and events tolerable (Ogden et al., 2006; Siegel, 1999). As such, the SES is a more nuanced branch of the parasympathetic nervous system (PSNS) delineated by Cannon; it is the initial ‘braking’ mechanism and line of defense before any other responses to threat are initiated (Ogden et al., 2006; Porges, 2003).

In modulating these day to day fluctuations in arousal, the ventral vagal complex and associated SES help reinforce an individuals’ overall ‘window of tolerance’ (Ogden
et al., 2006; Siegel, 1999), wherein “sympathetic and parasympathetic activity remain in relative balance, with each system achieving only a slight dominance over the other at any given moment” (see Figure 1) (Ogden et al., 2006, p. 28). Each individual has some “habitual width” to their own unique window, developed according to various inputs including the type and length of any given stimulus experienced, as well as the baseline arousal levels of an individual (from recent and/or long-standing experiences, as well as genetic components like temperament) (Ogden et al., 2006, p. 28; see also Siegel, 1999; Williamson & Anzalone, 2001). Within the window, an individual is able to “tolerate the complexity and stimulation inherent in the environment,” while also remaining able to “perceive subtle changes and novelty in the environment” (Williamson & Anzalone, 2001, p. 28). In other words, over time an individual’s SES helps establish and reinforce
a daily functioning zone wherein they are not notably activated by the stressors around them, but are still able to perceive notable stressors as they arise.

When arousal does exceed an individual’s window of tolerance, the second stage of Porges’ Polyvagal Theory is initiated. Specifically, the sympathetic nervous system is activated — the prior research’s overall contribution to the model and natural backup to the SES. “More primitive and less flexible” than the SES, SNS activation overtakes the SES in the face of perceived threat (Ogden et al., 2006, p. 30). After the amygdala evaluates a situation as dangerous, the hypothalamus ‘turns on’ the SNS and releases the neurochemicals that increase arousal as noted above (van der Kolk, McFarlane, & Weisaeth, 1996; Yehuda, 1997, 1998). When the body actually physically responds to threat through fighting or fleeing, its level of energy consumption successfully metabolizes the neurochemicals released by the SNS and threat is mitigated. Alternatively, if the source of the threat is interpreted as receded or disappeared and the body does not carry out the physical process of fighting or fleeing, the energy-preparation of the SNS gradually returns to an optimal zone over time (Ogden et al., 2006).

The third and final strand of Polyvagal Theory’s response hierarchy is managed by the unmyelinated vagus, the dorsal branch of the vagal nerve. Following the identification of threat by the ventral vagal nerve’s SES and either the unsuccessful or ill-advised activation of the SNS, the dorsal vagal nerve becomes the next, and final, line of defense. More primitive than both the ventral vagal and SNS stages of the theory, this additional strand of the PSNS represents true helplessness — the body initiates processes
of survival-related immobilization and energy conservation that are rooted in the dorsal motor nucleus of the brainstem, including a spectrum of responses like decreases in heart rate and respiration, increased feelings of numbness and separation from the sense of self, behavioral shutdown, and even feigning death (Ogden et al., 2006; Siegel, 1999). Commonly known within the literature as the ‘freeze’ response, the activation of the dorsal vagal nerve represents “a precarious state of abnormally dysregulated and fluctuating autonomic nervous system activity” that, even when not outwardly present in visual cues, remains high (Scaer, 2005, p. 45). As the last line of defense, the freeze response results in either succumbing to the threat or an accumulation of intense SNS and PSNS arousal. For the accumulation of arousal, the inherited bodily response is to subsequently undergo a process of ‘freeze discharge’ in which the body undertakes the motor discharge necessary to release the activation (often including symptoms that range from light twitching to violent, seizure-like shaking) (Levine, 1997; Scaer, 2005).

Autonomic Nervous System Dysregulation in Response to Stress

Polyvagal Theory represents the most complete attempt to date to tell the story of how the body is intended to respond to immediate threats. The complex but elegant three-stage process, when examined in a vacuum, successfully resolves any perceived danger and subsequent sympathetic or parasympathetic arousal that may occur. It is a system that wholly relies on integrated top-down and bottom-up processing within the mind, brain and body (Ogden et al., 2006, p. 40). Yet, like all natural systems, there are a number of circumstances under which such integration fails. Known as dysregulation
of the ANS, the inability of some part of the Polyvagal hierarchy to avert danger and/or resolve arousal results in long-lasting physiological and neurological consequences.\textsuperscript{13}

There are multiple ways in which the polyvagal hierarchy becomes disrupted and, ultimately, dysregulated. In some cases, as noted later in this Section, early-life wiring of these systems or allostatic adaptation can fundamentally inhibit future successful execution of the polyvagal hierarchy. In other cases, two other specific sequences motivating dysregulation are worthy of consideration. One such form follows the compromise of the ventral vagal nerve’s social engagement system (SES). When an individual is repeatedly subjected to danger and the SES is unable to negotiate a return to safety and/or protection, over time the system “habitually shuts down” (Ogden et al., 2006, p. 33). Its chronic inability to avert or resolve threat weakens the long-term strength and availability of the system—the system that, as noted above, represents the initial ‘braking’ mechanism for all daily stressors. As a consequence of its weakening over time, normal or neutral environmental cues that would typically be mediated by social engagement are instead interpreted as dangerous—allowing for the unchecked activation of either (or both) of the SNS and the dorsal vagal nerve (Ogden et al., 2006; Porges, 2004; van der Kolk, 1994). In other words, as stressors are repeatedly tagged as falling beyond the individual’s window of tolerance, the body tries to adapt and streamline the ways in which it reacts to those stressors—such that it actively

\textsuperscript{13} The revelations of ANS dysregulation rely on recent research that, contrary to prior beliefs about humans holding a fixed number of neurons, demonstrate an ability for adults to grow new neurons and change neural pathways during their life course (Eriksson et al., 1998; Gould, Tanapat, Hastings, & Shors, 1999).
lowers the threshold of response previously required, narrowing the overall width of the window of tolerance. As Ogden et al. (2006) note, “because the window of tolerance has become functionally narrowed by repeated traumatic responses, the individual is increasingly more vulnerable to perceived traumatic triggers... [and] unable to prevent wide swings of dysregulated arousal, fluctuating between the extreme zones of hyperarousal and hypoarousal” (p. 34). Weiss (2007) notes that this cycle is often referred to as kindling, in which “a stronger psychological and physiological response is elicited with triggers of diminishing strength” (p. 117; see also van der Kolk, 2003). The adaptive neuroplasticity of the brain begins to work against it rather than with it—the neural circuitry associated with dysregulation is strengthened, and the individual falls prey to a “pervasive, unrelenting reaction to the anticipation of a threat” (Ogden et al., 2006, p. 87; see also Czeisler et al., 1976; Stanley, 2010). The ‘bottom-up’ hijacking of a typically integrated process takes individuals beyond their own window of tolerance, hinders their ability to quickly or easily return to its increasingly narrowing bounds, and fundamentally dysregulates their responses to threat in the future (Siegel, 1999).

It should be noted that in addition to the narrowed window of tolerance and adaptivity of the body to extreme defensive strategies, a secondary effect of a SES compromised by chronic trauma is a diminished capacity for future relationships (Ogden et al., 2006, p. 33). Because the same traits that allow for the perception and interpretation of threat—the regulation of eye muscles, expression of emotion, ear muscles, and other activities listed above—allow for social interaction and communication between individuals, as the individual experiences chronic trauma, they lose the capacity of the SES both as a defensive ‘braking’ mechanism and a socialization system.
Another possible motivator of ANS dysregulation results from an inability to complete the activation discharge. Much like the compromise of the SES represents a bottom-up hijacking of the integrative process by dooming an individual’s survival brain to cycles of maladaptive defensive reactions, the inability to complete activation discharge similarly diminishes the structure and organization of future reflexive defensive reactions (Ogden et al., 2006, p. 36). However, there is an important top-down element that can instigate this bottom-up hijacking. The dysregulation following inhibited activation discharge occurs when, following the initial activating responses of the sympathetic and parasympathetic nervous systems, the cortical functions of the limbic system deem the last-chance dorsal vagal nerve response (and the spectrum of parasympathetic responses inherent in that process) inappropriate. In other words, the thinking brain ‘takes over’ before the defensive response is complete. This ability to make “voluntary, top-down, conscious decisions” while driven by a defensive response is an almost wholly human characteristic (Ogden et al., 2006, p. 86; see also Llinás, 2001), and is often guided by a strong sense of acculturation. The “behavioral threats and limits associated with the particular culture” of an individual’s thinking brain weigh heavily enough for it to usurp the natural process of activation discharge (Scaer, 2005, p. 213). For many human instances, this acculturation can breed social stigmas surrounding typical outwardly visible activation discharge behavior (shaking, trembling, etc.) which, as Scaer (2005) notes, then perpetuate the bottom-up cycle similar to the reorganization of neural circuitry for the disabled SES. As he notes, “If the person is unable to routinely and effectively discharge the freeze, the physiological
events that occur in the brain and endocrine and autonomic nervous systems associated in response to trauma and freeze will occur repeatedly” (Scaer, 2005, p. 213; see also Levine, 1997; Stanley, 2010). When the ability to discharge activation is compromised, the potential for long-term ANS dysregulation is greatly increased. Once again, an individual’s window in which they can functionally tolerate stressful experiences is narrowed, as activation continues to lurk within their autonomic nervous system.

**Predeterminants of Post-Traumatic ANS Dysregulation**

In addition to examining the theoretical and structural changes of the brain in response to ANS dysregulation, it is necessary to consider the subset of research that focuses on the various predeterminants that exist for such dysregulation, beyond the degradation of the SES or the inhibition of activation discharge—that is to say, preexisting factors that may influence when and how individuals experience dysregulated stress response systems.

The primary research in this field focuses on the exogenous experiencing of childhood trauma and its impact on attachment processes. Young children “cannot manage threat on their own... [and] are dependent upon their discriminated attachment figures to provide them with protection,” meaning that ultimately their stress response systems are dependent on their relationship with their primary attachment figures (Scheeringa & Zeanah, 2001, p. 801; see also Kraemer, 1992; Polan & Hofer, 1999). Attachment style research probes how children develop these internalized expectations about the availability of attachment figures in stressful environments, often according to
four generalized types of attachment style: secure attachment, insecure avoidant attachment, insecure anxious/ambivalent attachment, and insecure disorganized attachment (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1969, 1973, 1980; Hazan & Shaver, 1987; Stanley, in press). In this construct, securely attached individuals are those who developed an early sense that their caretaker was available for soothing in times of distress—such that they become physically and mentally habituated to the availability of help and thus are able to manage distress more effectively later in life (Bowlby, 1973). Those with either insecure avoidant or insecure anxious/ambivalent attachment styles instead become mentally and physically habituated to a sense of doubt that their distress can or will be soothed (Mikulincer & Florian, 1995). Insecure disorganized attachment shares roots with the other insecure attachment styles—insofar as insecure disorganized individuals can reflect elements of both avoidant attachment or insecure ambivalent attachment (Main & Solomon, 1986; Stanley, in press; van Ijzendoorn, Schuengel, & Bakermans-Kranenburg, 1999).

All of the insecure attachment styles can derive from the same environments; whether an individual is exposed to early caregiver inconsistencies or ineffectiveness, caregiver traumatization, or predisposed genetic vulnerabilities, they can develop one of the above attachment patterns as a result. Where the insecure attachments largely differ is in their coping strategies. Avoidant attachment motivates “inhibition of emotional display, denial of negative affects and memories, and devaluation of events that may cause painful feelings,” whereas anxious-ambivalent attachment motivates a hypervigilant and obsessive attention drawn toward distress (Mikulincer & Florian,
1995, p. 406; see also Kobak & Sceery, 1988). Disorganized attachment, in contrast, represents a complete breakdown of any consistent regulatory pattern, often fluctuating across the insecure attachment styles (Main & Solomon 1986; van Ijzendoorn et al., 1999).

Therefore, abuse or neglect by a caretaker during a child’s formative years is distinct from traumatic events that occur later in life because it can disrupt the learning of emotional regulation and identity formation at a time when the cognitive, perceptual, and language skills of the victim are functionally underdeveloped (Scheeringa & Zeanah, 2001; Stovall-McClough & Cloitre, 2006). As Siegel (1999) notes, “repeatedly experiencing out-of-control emotions, without a sense of others’ helping to calm them down, can lead [children] to be unable to soothe themselves as they develop. This lack of self-soothing can lead directly to a narrow window of tolerance” (p. 284). In other words, the existing windows of tolerance that the failure of the SES and/or inhibited activation discharge functionally narrow may already be exceptionally narrow as a product of childhood experiences with caretakers and subsequent dysregulated attachment patterns. The development of specific insecure attachment styles has been linked to an increase in common PTSD symptomatology (Clark & Owens, 2012; Ein-Dor, Doron, Solomon, Mikulincer, & Shaver, 2010; Renaud, 2008).

In addition to pre-wired dysregulated attachment patterns, adverse childhood experiences (ACEs) can narrow individuals’ windows of tolerance. Such ACEs can include sexual, physical, and emotional abuse; physical and emotional neglect; and general family dysfunction, and can lead to life-long sensitization of the nervous
system. By inhibiting a child’s ability to learn and imprint the standard operating procedures of the window of tolerance onto their nervous system, they are automatically set up to bypass ‘braking mechanisms’ and re-regulatory practices. The powerful and common impact of childhood abuse on future adulthood proclivity for stress-related physical illnesses, mood disorders, and anxiety disorders is confirmed in a number of studies in which anywhere from 48 to 85 percent of sufferers show a lifetime’s worth of symptoms (Briere, 1988; Browne & Finkelhor, 1986; Felitti, 2009; Kessler et al., 2010; Neigh, Gillespie, & Nemeroff, 2009; Roth, Newman, Pelcovitz, van der Kolk, & Mandel, 1997; Zlotnick et al., 1996). Often these first-order symptoms of ACE exposure like stress hypersensitivity, impulsivity, and aggression increase vulnerability for the kinds of psychiatric disorders that are associated with additional mental health effects like suicide risk (Brodsky & Stanley, 2008; Mann & Currier, 2010). Indeed, compared with individuals who experienced no ACEs, individuals with at least one ACE were more than twice as likely to report a suicide attempt, with individuals with ACEs in at least four categories being nearly four times as likely to report a suicide attempt (Dube et al., 2001; see also Stanley & Larsen, in press).

Thus, many studies that consider the dysregulation of the autonomic nervous system following a traumatic event in the adult lifespan often consider the experiencing of impaired/ineffectual childhood attachment and/or childhood abuse as significant predictors. Therefore, it is not only acute instances of trauma exposure and a disrupted polyvagal response that ‘prime’ the nervous system for dysregulation and narrow the window of tolerance—improper attachment patterns themselves can
functionally alter (and often, narrow) individuals’ windows of tolerance into adulthood such that future acute stress and trauma exposure is improperly processed.

There is also research on endogenous variables predicting the onset and form of dysregulation, including genetics, age, and gender. Genetics research has indicated several genetic vulnerabilities that may exacerbate an individual’s likelihood and/or severity of ANS dysregulation, surrounding both baseline neurotransmitter levels and the structural volume of brain regions like the hippocampus (Marshall & Garakani, 2002; Segman & Shalev, 2003; Stein, Jang, Taylor, Vernon, & Livesley, 2002; True et al., 1993; Weiss, 2007; Yehuda, 2009). Beyond baseline genetic predispositions, epigenetic change—the idea that gene expression depends in part on how the mind, brain, and body habituate to physical and social environments (Stanley, in press)—means that a number of researchers have demonstrated that the chronicity of dysregulation impacts its severity. As Bremner and Vermetten (2001) confirm, “early stressors result in long-term dysregulation of stress response systems” such that individuals who experience ANS dysregulation at younger ages may be predisposed to have more severe responses due to such shifts in genetic expression (p. 484). Even more notable, perhaps, is that the epigenetic changes that occur with something like ANS dysregulation can actually be passed on to subsequent generations (Stanley, in press). Experiments have shown how shifts in gene expression lead offspring to mimic an adult’s adopted expression (i.e. not their original genetic expression) such that the changes in traits trickle down through family lineages—suggesting that family history may be another key predeterminant of ANS dysregulation. In addition, a smaller number of studies have examined gender
and ANS dysregulation, with results that consistently suggest a difference between male and female individuals relative to neurotransmitter functioning (Hawk, Dougall, Ursano, & Baum, 2000; Maes et al., 1998; Wolfe & Kimmerling, 1997; Yehuda et al., 1995).

**Symptoms of ANS Dysregulation**

The hypotheses underlying Polyvagal Theory and ANS dysregulation explored in above could not be rigorously tested until the advent of newer fMRI and PET technologies. Now, within the last two decades, practitioners have made great strides in observing the specific neurobiological relationships that reflect the stress response and translate ANS dysregulation into shifts in cognition, emotion, physiology, and behavior. At the most general level, when the SES is disabled and/or activation discharge is inhibited resulting in ANS dysregulation, its impact is perhaps greatest on the structure and operations of chemical neurotransmitters. During extreme stress, typical processes of neurotransmitter binding, exchange, and release are disrupted; hormones necessary for immediate energy mobilization may be over-activated and flood the neurotransmitter processes, while the hormones that facilitate non-essential functioning may suppress their neuronal communication. Typically, once the energy is mobilized or deferred and the presence of the threat fades, the constant operations of the well-balanced neurotransmitter exchanges resume (this is the balanced process that takes place within the normal functions of Polyvagal Theory).
However, during ANS dysregulation, no such resumption occurs. Rather, because dysregulation marks a continued sense of threat—either because a disabled SES provides kindling for future reactivity to new stressors, because inhibited activation discharge fails to resolve the existing reactivity to a stressor, and/or because of long-held developmental shifts on how these systems operate, the neuronal communication fails to return to homeostatic processing.\(^\text{15}\) Furthermore, because all structures of the brain are so dependent on such neurochemical processes and each other for integrated communication, a number of specific structures reveal unique responses when dysregulated.\(^\text{16}\) The question then emerges: what are the symptoms that follow such

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\(^{15}\) Studies have found important relationships between dysregulation and norepinephrine (Blanchard, Kolb, Prins, Gates, & McCoy, 1991; Bremner, Krystal, Southwick, & Charney, 1996; Bremner, 2002; Bremner et al., 1997; Kosten, Mason, Giller, Ostroff, & Harkness, 1987; Vermetten & Bremner, 2002; Yehuda, Southwick, Giller, & Mason, 1992); cortisol (Bremner, 2002; Bremner et al., 1997; Coplan et al., 1996; De Kloet et al., 2007; Goenjian et al., 1996; Grossman et al., 2003; Gutman & Nemeroff, 2003; Ladd, Owens, & Nemeroff, 1996; Levine, Wiener, & Coe, 1993; Miller, Rubin, Clark, Crawford, & Arthur, 1970; Newport, Heim, Bonsall, Miller, & Nemeroff, 2004; Plotsky & Meaney, 1993; Rose, Poe, & Mason, 1968; Rubin, Rahe, Arthur, & Clark, 1969; Schulkin, Gold, & McEwen, 1998; Stein, McCrank, Schaefer, & Goyer, 1993; Yehuda, 2002; Yehuda, Halligan, Golier, Grossman, & Bierer, 2004; Yehuda et al., 1995); and dopamine and serotonin (De Bellis et al., 1999; Segman et al., 2002; Spivak et al., 1999; Yehuda et al., 1992).

\(^{16}\) These include the thalamus (Bremner et al., 1999; Kimble & Kaufman, 2004; Liberzon, Taylor, Fig, & Koepppe, 1996; Llinás, Ribary, Contreras, & Pedroarena, 1998; Ogden et al., 2006; Weiss, 2007); the amygdala (Bremner, 2002; Hull, 2002; Britton, Phan, Taylor, Fig, & Liberzon, 2005; Chugani et al., 2001; Lanius et al., 2002; Lanius et al., 2003; Lanius, Bluhm, Lanius, & Pain, 2006; Liberzon & Phan, 2003; Perry et al., 1995; Pitman, Shin, & Rauch, 2001; Shin, Rauch, & Pitman, 2006; Tanev, 2003; Teicher et al., 2003; Weiss, 2007); the hippocampus (Bremner, Krystal, Southwick, & Charney, 1995; Bremner et al., 1999; Geuze, Vermetten, & Bremner, 2004; Teicher, Tomoda, & Andersen, 2006; van der Kolk, 1994); the anterior cingulate cortex (ACC) (Bremner et al., 1999; Bush, Luu, & Posner, 2000; Davidson, Pizzagalli, Nitschke, & Putnam, 2002; Lanius et al., 2001; Lanius et al., 2003; Shin et al., 2001; Woodward, Meier, Tipper, &
changes? If we know what may cause dysregulation and know how it may look within the brain, what does it look like in practice?

A number of scales in the literature attempt to capture the numerous behavioral, emotional, cognitive, physiological, and spiritual symptoms that follow the restructuring of neurotransmitters and other brain structures during dysregulation (Kristeller, 2007; Stanley & Schaldach, 2011; Weiss & Marmar, 2004; Wilson & Keane, 2004). However, the large number and diversity of symptoms prevented the emergence of any consensus among scholars as to the most valid scale. Clinicians instead often rely on ‘cluster’ models that separate symptoms in the interest of disentangling their varieties such as two-factor models (Creamer, Bell, & Failla, 2003; Taylor, Kuch, Koch, Crockett, & Passey, 1998), four-factor models (Amdur & Liberzon, 2001; King, Leskin, King, & Weathers, 1998), and five-factor models (Wilson & Keane, 2004), but there is much dispute over when symptoms are measured, how they are

Graf, 2003); the insular cortex (King et al., 2009; Nagai, Kishi, & Kato, 2007; Rauch et al., 1996); and the prefrontal cortex (PFC) (Britton et al., 2005; Bryant et al., 2005; Carrion et al., 2001; De Bellis et al., 2002; Gilboa et al., 2004; Shin et al., 2004; Shin et al., 2006; Uno, Tarara, Else, Suleman, & Sapolsky, 1989; Williams et al., 2006; Zubieta et al., 1999).

17 The vast majority of the studies surveyed in Part 2 focus on measuring post-traumatic stress disorder (PTSD) rather than explicitly recognizing ANS dysregulation. However, much of psychiatric literature emphasizes the relationships between trauma, PTSD, allostasis, and other anxiety and mood-related disorders that are widely understood to reflect dysregulation. Many authors have demonstrated significant comorbidity among such diagnoses (Davidson, Kudler, Saunders, & Smith, 1990; Helzer, Robins, & McEvoy, 1987; Jordan et al., 1991; Sierles, Chen, McFarland, & Taylor, 1983); as Mellman, Randolph, Brawman-Mintzer, Flores, and Milanes (1992) explain, patterns of response to trauma appear to have wide-ranging implications for multiple psychiatric diagnoses. Thus, studies surveyed in Part 2 in which PTSD is the primary focus remain under the umbrella of ANS dysregulation, even if only representing one piece of it.
measured, and what the relationships are within and among symptom clusters. Indeed in the last two decades, a new consensus has emerged that all classical stress spectrum disorders are interrelated and can manifest in a number of ways (Bremner, 2005; Bremner, 2002; Luxenberg, Spinazzola, & van der Kolk, 2001).

In general, however, Kardiner (1941) and Lindemann (1944) established early in the study of dysregulation that the multitudinous trauma responses are roughly bimodal in distribution. Specifically, Bremner (2002) defines the two poles of acute trauma response that occur above and below a person’s window of tolerance as predominantly intrusive or dissociative—known commonly as hyperarousal and hypoarousal (Lanius et al., 2002; van der Kolk, 2003).

When an individual’s cycle of dysregulation falls within chronic hyperarousal, their dysregulation is marked by intrusivity. A poor tolerance of the psychological and physiological arousal of dysregulation leads hyperaroused individuals to experience an intensely “accelerated pace of emotions, sensations, and sensory stimuli” that “disrupt[s] reasoning and the ability to engage in reflective ‘reality checks’” (Ogden et al., 2006, p. 34). They are ‘stuck on high,’ sensitized to re-experiencing traumatic memories that can result in increased heart rate and blood pressure; sensitivity to sensation, tension, uncontrolled movement; flashbacks and nightmares; and explosive aggressive outbursts and startle responses (Krystal, 1978; McCarty & Gold, 1996; Schwarz & Perry, 1994; van der Kolk, 2003).

Conversely, when an individual experiences the dysregulatory cycle of hypoarousal, the intrusivity of hyperarousal is mirrored instead as dissociation. Losses
in memory, motor function, sensory awareness, cognitive function, attention, and/or memory capacity appear alongside general paralysis, numbing, and/or weakness to create a “subjective sense of separation from the body” (Ogden et al., 2006, p. 35).

Rather than a misinterpretation of danger readying the senses as it does within a cycle of hyperarousal, the misinterpretation of cues within hypoarousal results in an abandonment of readiness and lowering of consciousness (Frijda, 1986; Perry et al., 1995). The individual “may feel that life is not worth living, that nothing matters, [or] that death would be a relief,” a state that often resembles and/or coincides with major depressive states and leads to increased avoidance of attachment and relationships (Corrigan, Fisher, & Nutt, 2010; Krystal, 1978).

Though there exist two poles of dysregulation, the literature strongly emphasizes the highly interrelated relationship and shared foundation that hyperarousal and hypoarousal share. Granted, research has shown that hyperarousal is the predominant ANS dysregulation state; in clinical observations it was exhibited in more than two-thirds of subjects (Lanius et al., 2002; Schell, Marshall, & Jaycox, 2004). Yet, scholars are quick to note that individuals who are dysregulated often oscillate between the two extremes as part of what Corrigan et al. (2010) call a ‘biphasic rollercoaster’: they experience uncomfortable effects of one arousal state, frantically attempt to self-regulate and return to their window of tolerance, and instead overcompensate into the opposite arousal state (Burgess & Holmstrom, 1974; Crawford, 2010; Figley, 1978; Frewen & Lanius, 2006; Hilberman, 1980; Horowitz, 1974; Meloy, 2000; Ogden et al., 2006;
Southard, 1919; Terr, 1983; van der Kolk, 2003). For example, if an individual eats to soothe flashback terror they may experience worthlessness and social isolation, which in turn allows for additional intrusive imagery (Corrigan et al., 2010). The rollercoaster also often changes in composition over time; hyperaroused states can shorten as hypoaroused states lengthen (Scaer 2005), which Scaer argues often results from multiple traumatic experiences or in the case of complex trauma (where someone has experienced ACEs followed by shock traumas in adulthood). Alternatively, as Corrigan and colleagues (2010) note, at times ‘rollercoastering’ is “so rapid that the high and low arousal states effectively coexist… giving rise to an extremely unpleasant dynamic dysphoric tension” (emphasis added; p. 7). Furthermore, many of the symptoms of ANS dysregulation that emerge can be exhibited in both states. Thus, though hyperarousal may be recorded more often than hypoarousal, the two poles clearly have an interactive relationship that constantly pulls an individual beyond the upper and lower limits of their window of tolerance.

In this way, the defining feature of ANS dysregulation remains the way in which it systematically and continually narrows an individual’s window of tolerance, such that they are quickly and consistently subject to their survival brain making decisions

18 The research that exists on biphasic experiencing of hyperarousal and hypoarousal dysregulatory states is not limited to post-traumatic stress disorder; clinical observations come from bodies of literature on additional psychiatric disorders including bipolar disorder, autism, and schizophrenia. While all of the lessons of these research paradigms greatly impact our understanding of the extremes of dysregulation, the differentiating characteristic of the biphasic experiences described in Part 2 and dissertation as a whole is exposure to a traumatic event (Yehuda, 2009).
without the braking mechanism and information processing/evaluation of the thinking brain. Sometimes that decision will be to dissociate, and sometimes it will be to hyper-react, each involving a multitude of possible symptoms—but the foundational symptom of dysregulation is that the survival brain will be seeking control of the situation that best guarantees what it perceives as safety for the individual.

As Bremner et al. (1996) note, an ideal longitudinal analysis of the onset, severity, and chronicity of post-traumatic stress symptoms does not exist for a few primary reasons. First, recall that PTSD symptomatology was included in the Diagnostic and Statistical Manual III (DSM-III) in 1980, meaning that the understanding and standardization of research has really only flourished in the last few decades. Second, given the broad impact of ANS dysregulation and the often cyclical pattern in which it is experienced, obtaining measurements in which symptom severity is neither minimized nor exaggerated by dysregulated individuals is difficult to guarantee (Litz & Keane, 1989; Roemer, Orsillo, Borkovec, & Litz, 1998). Third and of particular significance, the exogenous event-dependent nature of ANS dysregulation means that obtaining pre-stressor baseline measures is typically infeasible. Administering a traumatic event to measure the development of ANS dysregulation would be explicitly unethical, while measuring an enormous population sample in hopes of capturing and studying a small fraction of whom may become traumatized over the course of time is similarly unfeasible (Bremner et al., 1996).[^19]

[^19]: Though impossible to specifically administer a traumatic event, note that it would be possible to study a smaller population of individuals who might be preparing to be
As a compromise, retrospective studies have dominated the post-traumatic stress response research on symptom severity and chronicity. Early research from WWII found evidence of gradual increases and worsening over time in symptoms similar to those of ANS dysregulation in more than half of trauma-exposed individuals (Thygesen, Hermann, & Willanger, 1970), while a study of prisoners of war (POWs) found the presence of symptoms in 50% of POWs one year after trauma exposure and in 29% of those survivors forty years later (Kluznik, Speed, Van Valkenburg, & Magraw, 1986; Lewis & Engle, 1954). These conflicting results continued well into the Vietnam War and Gulf War eras, where some studies found gradual increases in PTSD diagnoses over time in veterans (Southwick et al., 1993; Ursano, Boydstun, & Wheatley, 1981) while others found evidence of declining prevalence over time (Kulka et al., 1988). Bremner et al. (1996) sought to resolve these variable outcomes by closely parsing out the specific symptoms and self-medication patterns that emerged over time in a cohort of Vietnam veterans. They found a consistent onset of symptoms during war, an increase of symptoms in the post-conflict period, and an eventual plateau and consistency of symptoms over time. Traditional hyperarousal symptoms emerged first and most strongly, with more classical hypoarousal symptoms increasing later (and concomitant increases in abuse of self-medication resources like alcohol and drugs) (Bremner et al., 1996; Scaer 2005). In this way, they once again effectively demonstrate exposed to potentially traumatic stressors (e.g., combat) to assess baseline dysregulation, then subsequently assess dysregulation after the stressor exposure itself. Bremner et al. (1996) note that this result potentially challenges the aforementioned notion that symptoms oscillate between hyper/hypoarousal modes by providing
the key symptom of ANS dysregulation: a semi-permanent and continual narrowing of individuals’ windows of tolerance, such that they reliably experience both hyper- and hypo-aroused symptoms.

A large quantity and quality of research on specific symptom severity and chronicity remains to be conducted in order to introduce the variation and baseline measurements necessary for conclusive findings. However, in the meantime these retrospective pieces of the literature suggest that symptoms of ANS dysregulation are both potentially powerful and long-lasting.

**Potential Resilience or Re-Regulation of ANS Dysregulation**

As powerful and long-lasting as the literature paints dysregulation and a narrowed window of tolerance to be, research has exposed a number of factors and treatments that can allow for re-regulation of the stress response system. Sleep and physical exercise represent two of the most simple and common factor examples, as they allow an individual’s nervous system to activate and/or settle in a controlled rhythm, thereby reducing neurobiological vulnerability to stressors (Fruzzetti, Shenk, Lowry, & Mosco, 2003). Another common approach is to build the capacity for reactivity to stressors via conditioning, whereby individuals are subjected to stressors in a controlled setting and, with appropriate preparation and training, become more evidence of long-term chronicity and consistency. However, the authors concede that a number of population-specific factors may be responsible for such results — including the fact that individuals were assessed at two-year intervals, allowing for the possibility of unmeasured fluctuation within that window.
comfortable with said stressors. As Stanley (2010) highlights, this approach has often been a part of traditional preparation and training for potentially traumatic scenarios like combat service, through stress immunization practices.

Though no therapy has necessarily been deemed universally effective, a number of key therapies have emerged in the pursuit of ANS re-regulation (Payne et al. 2015; Levine 1997; Levine 2005; Ogden et al. 2006; Ogden & Fisher, 2015; Gibson, 2005; Leitch, Vanslyke, & Allen, 2009). There are a number of stand-alone body-based interventions designed to reconcile past/existing effects of dysregulation. Somatic Experiencing (SE) focuses on resolving the body’s movement impulses following traumatic experiences in small increments (Levine, 2005; Levine, 1997). This process of “identifying and restructuring motoric and other psychophysiological patterns that underlie a wide variety of traumatic responses,” when tested, has shown promising results relative to easing and re-regulating bodily responses to trauma (Leitch, 2007, p. 11; see also Heller & Heller, 2004; Norris, Arna, Bramson, & Meagher, 2004; Parker, Relph, & Dagnall, 2008). The SE intervention is similar in content to Sensorimotor Psychotherapy (Ogden & Minton, 2000; Ogden et al., 2006), in which individuals’ sensorimotor arousal is used “as a primary entry point” (Ogden & Minton, 2000, p. 150) alongside cognitive and emotional arousal interventions to ultimately guide individuals towards improved self-regulation.

Most recently and strongly, research has emphasized the effects of mindfulness-based interventions on functionally improving resilience via attentional, emotional, and interoceptive control (Bowen et al., 2006; Chiesa & Serretti, 2009; Farb et al., 2007; Haase
et al., 2016; Jha et al., 2010; Johnson et al., 2014; Kabat-Zinn, 1990; Kabat-Zinn, Lipworth, & Burney, 1985; Stanley, 2010; Stanley, Schaldach, Kiyonaga, & Jha, 2011; Taylor et al., 2011; Zeidan, Johnson, Diamond, David, & Goolkasian, 2010). Defined as “the awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment by moment” (Kabat-Zinn, 2003, p. 145), mindfulness has been increasingly utilized in the treatments of a number of various trauma-related psychological and physical disorders, including generalized anxiety disorder (Roemer & Orsillo, 2002), borderline personality disorder (Linehan, 1993), and depression (Segal, Williams, & Teasdale, 2002), as a means of increasing the experiencing (i.e., reducing the deleterious avoidance) of trauma-related experiences (Batten, Orsillo, & Walser, 2005).

There is a vast amount of differentiation among mindfulness program design and effectiveness across dysregulated populations. In general, commonly practiced mindfulness programs like Mindfulness-Based Stress Reduction (MBSR) (Kabat-Zinn, 1982) have found significant reductions in depressive and PTSD symptomatology in adults with significant prior trauma (Kimbrough, Magyari, Langenberg, Chesney, & Berman, 2010). Notably, however, in addition to rarely utilizing controlled outcome studies (Thompson, Arnkoff, & Glass, 2011), such programs are often contraindicated for people actively experiencing post-traumatic stress or trauma. Indeed, the University of Massachusetts’ Center for Mindfulness (the home of MBSR) explicitly states that MBSR coursework is not designed for anyone currently suffering with PTSD or other mental illness, and goes as far as to recommend that individuals seek other treatment if
they have “a history of substance or alcohol abuse with less than a year of being clean or sober, thoughts or attempts of suicide, recent or unresolved trauma,” or if they are “in the middle of major life changes” (Center for Mindfulness in Medicine, 2014, n.p.; Santorelli, 2014; Stanley & Larsen, 2017). Research by Britton (2014) explicitly addresses such adverse effects of mindfulness practice. As part of the Dark Night project at Brown University, researchers evaluated experienced meditation practitioners and novices in their completion of 8-week clinical programs in MBSR or other mindfulness-based cognitive therapy—finding prolonged periods of cognitive, emotional, perceptual, psychological, and/or physiological impairment among most experienced practitioners and 40% of the novice practitioners (with those who had prior trauma history experiencing increased length and/or severity of their symptomatology) (Britton, 2014; Lindahl, Fisher, Cooper, Rosen, & Britton, 2017; Stanley, in press; see also Shonin et al. 2014; Dobkin et al. 2012).

However, some programs exist that seek to couple mindfulness skills training with additional body-based self-regulation skills, in order to guide individuals to more effective regulation of the ANS (in ways that are more sensitive to the effects of existing/past dysregulation). For instance, Mindfulness-based Mind Fitness Training (MMFT) was designed to improve functioning before and during stressful experiences, and to improve recovery after such experiences, with “special attention given to the fact that varying levels of pre-existing chronic stress and trauma exposure may exist among training cohorts” (Larsen & Stanley, in press; Stanley, in press; Stanley & Schaldach, 2011; Stanley et al., 2011). As noted, MMFT draws from mindfulness training, but also
incorporates the skills and concepts from body-based trauma therapies including Sensorimotor Psychotherapy (Ogden & Fisher, 2015; Ogden et al., 2006), Somatic Experiencing (Levine, 1997; Payne, Levine, & Crane-Godreau, 2015), and the Trauma Resilience Model (Leitch et al., 2009). This balance cultivates attentional control and tolerance for challenging experiences, and individuals gradually develop enhanced interoception (i.e., “the process through which the brain monitors and updates the body about its overall physical state, including its ability to recognize bodily sensations, be aware of emotional states, and maintain physiological homeostasis”) (Johnson et al., 2014, p. 844). As such, the multiple variants of MMFT programming (8-24 hours of instruction delivered over the course of 8 weeks, intensive single-week courses, introductory day-long or week-long workshops, etc.) promote top-level control over the subcortical processes regulating stress and negative emotions (Larsen & Stanley, in press; Critchley et al., 2003; Critchley, Wiens, Rotshtein, Öhman, & Dolan, 2004; Garfinkel & Critchley, 2013).

MMFT was tested in four studies of U.S. combat troops in stressful environments (predeployment training prior to deployments to Iraq and Afghanistan), and showed improvements in several outcome domains. These included cognitive performance (via improvements in sustained attention, protection against working memory degradation, and improvements in working memory capacity) (Jha, Witkin, Morrison, Rostrup, & Stanley, 2017; Jha et al., 2015; Jha, Morrison, Parker, & Stanley, 2016; Jha, Stanley, Kiyonaga, Wong, & Gelfand, 2010); more efficient activation of brain regions utilized in interoception, emotion regulation, and impulse control (Haase et al. 2016; Johnson et al.
improved physiological self-regulation (via indices of blood-plasma levels of neuropeptide-Y and heart-rate/breathing-rate showing more efficient physiological arousal and complete recovery) (Johnson et al. 2014), improved sleep (Sterlace et al., 2012), and self-reported improvements in individuals’ perceived stress levels and mood (Jha et al., 2010; Stanley et al., 2011; Larsen and Stanley, in press). Additional diverse therapies and trainings exist with varying degrees of top-down and bottom-up processing, though they do not specifically target ANS regulation. For instance, Dialectical Behavioral Therapy (DBT) is a mind-body intervention that combines mindfulness training, emotion regulation skills training, and individual psychotherapy (Linehan et al., 2006) and has been shown to be effective among those with borderline personality disorders (Kliem et al. 2010; Linehan et al. 2006; Linehan et al. 2015). Likewise, Eye Movement Desensitization and Reprocessing (EMDR) similarly focuses on emotional and cognitive reprocessing, with its own promising results (Bradley, Greene, Russ, Dutra, & Westen, 2005; Devilly & Spence, 1999; Grainger, Levin, Allen-Byrd, Doctor, & Lee, 1997). Both of these therapeutic techniques blend top-down and bottom-up processing, with the ultimate goal of re-regulation.

In contrast, Cognitive Behavioral Therapy (CBT) (Brown et al., 2005; Beck, 1979), and Positive Psychology interventions (Fredrickson, 2003; Seligman, 2002) focus on top-down processing, based on the principle that increased understanding and training in strategies for regulating emotion can replace maladaptive ones (Bryan, Rudd, & Wertenberger, 2013). These therapeutic techniques rely on strategies of cognitive control; they teach cognitive reappraisal, where emotional stimuli are actively
reinterpreted via cognitive means. However, they do not include bottom-up processing or target ANS re-regulation.

A great deal more research remains to be executed and published to evaluate the benefits and magnitudes of these and other re-regulative therapies, given both the competing theoretical orientations considered here as well as the often nonrandom and non-comparative samples that previous studies have relied upon. Yet, the varied evidence throughout the literature does clearly coalesce around a general finding: dysregulation is not necessarily permanent and, through both natural factors and some administered therapies, can be remedied partially or wholly over time.

**Lessons and Limitations from Research on the Processing of Trauma and ANS**

**Dysregulation**

The above comprehensive survey of research on the theories of trauma and ANS dysregulation; the predeterminants, neurobiology, and symptoms of ANS dysregulation; and chronicity and reregulation of ANS dysregulation outlines the significant contributions research has offered to our overall understanding of trauma and its processing. Understanding how the mind, brain and body should react, how they sometimes act instead, and the potential effects of that action over time tells a nearly full story of the human relationship with trauma. However, one particularly significant gap remains among this deluge of information: though the literature emphasizes an integrative understanding of the causes and processes of dysregulation, it neglects a similar holistic approach concerning the effects of dysregulation.
Understanding trauma and its potential dysregulation of the stress response system is, as shown in the prior sections, a process that affects each of the mind, brain, and body systems in its own unique way. However, the effects of that dysregulation—its symptoms—take place in places far beyond the mind, brain, and body. For every change that occurs neurologically and behaviorally in a person’s startle response, a personal or professional relationship reflects that change; for every shift in a dysregulated individual’s sleep pattern, a partner in a relationship experiences that shift. As trauma research measures how dysregulation is manifested in the person, the natural question becomes: how is dysregulation manifested in that person’s world?

The literature offers little response to what its symptomatology means for the dysregulated individual’s interactions with the world around them. Some researchers have documented poor adjustment and increased aggression and abuse within the intimate partnerships of individuals with PTSD (Byrne & Riggs, 1996; Carroll, Rueger, Foy, & Donahoe, 1985; Miller et al., 2013; Taft et al., 2005; Taft, Watkins, Stafford, Street, & Monson, 2011; Johnson Todd et al. 2005), while others have used divorce rate as a proxy for a number of dysregulatory symptoms within couples in which a partner has PTSD (Cooke, Michie, Hart, & Clark, 2004; Jordan et al., 1992; Miles, 2005). Similar findings show that emotional and behavioral issues attributable to dysregulation in adults can have spillover effects at home, such that children end up with emotional/behavioral disorders and distorted views of the world and themselves (see Margolin & Gordis 2000; Lester et al. 2010; Klostermann & Kelley 2009).
Several studies show a clear link between trauma and problematic social behaviors like increased tobacco use, heavy alcohol consumption, and illicit drug use (Green et al. 2010; Larson et al. 2012; Institute of Medicine 2014). Other studies also examine the relationship between traumatic experiences and increases in later criminal activity (Burgess, Hartman, & McCormack, 1995; Currie & Tekin, 2012; Fox, Perez, Cass, Baglivio, & Epps, 2015; Groth & Burgess, 1979; Seghorn, Prentky, & Boucher, 1987), while others found increased rates of unemployment among those with prior traumatic life experiences—though the authors themselves note how little research has been done on the topic (Liu et al., 2013; Strøm et al., 2013; Zielinski, 2009). However, true to the medical literature, even these limited studies focus on correlations more than any theoretical explanation for how ANS dysregulation as a whole changes the underlying preferences and decision-making that underlie personal and professional relationships.

Though a narrow scope of theory and measurement is often the hallmark of medical research, the already diversified approach to studying trauma and dysregulated stress responses demands that the study of its effects be equally robust. This dissertation seeks to take a significant step forward in integrating our understanding of the dysregulated individual and their relationship with the world. By measuring the relationship between specific ANS dysregulation and shifts in policy preferences, it seeks to add some needed nuance to dysregulation symptomatology—helping to partially fill the gap that exists in the symptomatology cause-effect relationship and, ultimately, improving our understanding of the impact of post-traumatic ANS dysregulation.
Finally, in order to better understand any relationship between combat service and foreign policy preferences, it is necessary to understand how individuals form and select certain preferences in the political realm. Part 3 thus offers a survey of the varied literature on individual choice and decision-making in international relations.21

The following section reviews prior literature related to preferences and decision-making. It uses three sections to consider rational choice theories in international affairs, including expected utility theory and prospect theory; growing research on emotions and the integrative contributions of belief systems, personality research, and poliheuristic theory; and ultimately a dual systems theory and emerging lessons from neuroscience. Part 3’s series of in-depth considerations concludes with a summary of the lessons and limitations from each area of decision-making research, and poses the central questions that remain.

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21 Note that though ‘international relations’ and ‘foreign policy’ are of course distinct research environments within political science, this dissertation treats them as wholly intertwined—wherein foreign policy is the actor-specific ‘ground’ of international relations—such that the terms are often used interchangeably throughout the manuscript (Hudson, 2005).
A Brief History of Individuals in International Relations Theory

Understanding how people make the decisions they do is a long-standing goal of many social science research traditions. Within international relations, such questions first begin with defining who exactly the ‘actor’ is, using the theoretical construct of ‘levels of analysis.’ Building on Waltz (1959)’s seminal exploration of the three images in international relations, Jervis (1976) pioneered four discrete levels of analysis designed to capture behavior across the international realm: individual decision-making (in which individuals are responsible for specific behaviors), government bureaucracy (in which preferences are determined by a committee of power-wielding individuals), the domestic nation-state (in which a state’s economic, social, and/or political structure determines international action), and the international environment (in which international rules and regulations guide state behavior). The foreign policy analysis research paradigm, distinct from but neatly situated within the broader international relations research, very clearly follows this delineation; the majority of research accepts the four main ‘levels’ shown in Figure 2 as the guiding forces for decisions, with most authors situating their piece in at least one of the categories (Mintz & DeRouen, 2010).

Yet, Jervis (1976) did more than just explain the levels of analysis in international relations—he used the common deterrence and spiral models to make a clear case that all four levels of analysis are not created equal and that one category, the primary individual decision-making level, is the root of all others. Though acknowledging that
FIGURE 2. Levels of Policy Decisions.

the individual may realistically be a dependent variable responding to outside forces as predicted by the other three levels of analysis, he suggested that the individual is better understood as an intervening variable, whose words, beliefs, images, and intentions interact with an environment to produce specific outcomes (Jervis, 1976).²²

Disregarding critics, over time a rich body of work began to expound on the premise of individuals as determinants in the international system (‘t Hart, Stern, & Sundelius, 1997; Bunce, 1981; George, 1997; Hudson, 2005; Khong, 1992; Plous, 1993).

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²² This revolutionary argument went firmly against the grain of the dominant schools of international relations thought. Critics claimed that theories of the individual could never achieve parsimony; the sheer number of individualistic traits means that any comprehensive analysis would impose a “back-breaking burden” on the researcher as they attempt to build a theory of infinite inputs with drastically limited explanatory power (McClosky, 1962, p. 201; see also Waltz, 1979). Furthermore, some critics argued that state intentions—and thereby individual intentions, per the intervening variable argument—are not relevant to the overall study and practice of international relations in the first place. States are all fundamentally security-seeking in international system, the argument went; they have one ultimate goal, survival, that equates them and eliminates any variation in the human variable (Waltz, 1979, 1997).
Indeed, at the turn of the century Byman and Pollack (2001) called for a resurgence of individual-based theorizing in international relations. Their thorough review of recent research programs on individual traits revealed that research to be both rigorous and well-defined, dismantling the traditional criticisms and setting the stage for realistically parsimonious theories of the individual to emerge and interact with the intentions of security-seeking states in unique ways. Whereas this section captures the inter-paradigm approach to the individual within IR; the sub-sections that follow capture the intra-paradigm divide over how those individuals form their specific preferences.

**Rational Choice Theories of the Individual**

*Expected Utility Theory*

The expected utility model is the foundation of rational choice-driven decision-making research. Originally, a correspondence between Blaise Pascal and Pierre de Fermat in the mid-1600s gave rise to the idea that in probability equations, expected values can be assigned to different outcomes that, in turn, reveal which options are value maximizing and which are not (Gigerenzer & Selten, 2001; Trepel, Fox, & Poldrack, 2005). The appeal of the idea that simple calculus could determine the costs and benefits of specific choices was not lost on behavioral economists; by the late 1940s Von Neumann and Morgenstern (1947) had provided the first set of axioms related to the relationship between personal preferences and the possibility of calculated expected utility values and maximization (Raiffa, 1968; Savage, 1954; Trepel et al., 2005). Under the officially formed Expected Utility Theory (EUT), the assumption was that
individuals construct utility functions for logically consistent preferences within a coherent and transitive preference order, all with the ultimate goal of maximizing their own satisfaction or expected value (Levy, 1997; Morrow, 1994; Riker, 1990). At any given moment actors retain a single set of goals that they then pursue rationally—defining said goals, listing the options for achieving them, evaluating the desirability and likelihood of each available option by weighting their expected utility and probability, summing over all possible outcomes, and ultimately choosing the option that best satisfies those goals (Allison, 1969; Levy, 1996; Loewenstein, Weber, Hsee, & Welch, 2001). It is a theory that relies on invariance—its overarching belief is that “the preference order among prospects should not depend on how their outcomes and probabilities are described and thus that two alternative formulations of the same problem should yield the same results” (Quattrone & Tversky, 1988, p. 734). Any violations of this rational process, it is argued, would be inconsequential—the competitive market forces of value maximization would reward expected utility maximizers and eventually eliminate non-rational players from the game (Mellers, Schwartz, & Cooke, 1998). Undeniably straightforward, the beauty and practicality of such a methodologically rigorous model made it the ultimate foil for early versions of belief systems and individual personality research. The principles of EUT quickly lent themselves to disciplines far beyond economics, becoming one of the most heavily utilized formal models in fields like finance, marketing, and eventually, political science (Mellers et al., 1998).
One of the most seminal applications of EUT in international relations came from Bueno de Mesquita (1985), in which individuals were argued to have fixed and given preferences and that, upon entry into an international bargaining interaction, actively take actions designed to satisfy and maximize those preferences. Using four variables to define those preferences, the investigation correctly predicted observed behavior in more than 90 percent of cases (Bueno de Mesquita, 1985). A later but equally seminal application of EUT to international relations came from Fearon (1995) whose rationalist explanation for war showed the many ways in which seemingly irrational outcomes were convincingly derived from utility-based, rational calculations. These works were complimented by additional analyses of bargaining (Huth, 1998; Reiter & Stam, 1998; Wagner, 2000), as well as trust and uncertainty (Morrow, 1989), deterrence (Kydd, 2000; Sample, 1997, 1998), and more.

Over time, however, the façade of EUT in political science—and beyond—began to crumble. A number of thoughtful critiques emerged surrounding its assumptions and omissions. Scholars first challenged the central assumption that there is ever a single, correct, utility-maximizing response to any prompt (Mellers et al., 1998). As Bendor and Hammond (1992) summarize, the argument that a decision-maker’s world could be reduced one goal—and the preferences and probabilities attached to it—suggests perfect information in a world where information is almost always far from perfect. Rather, individuals often operate with limited assumptions and biases that
cloud their ability to perfectly estimate outcomes and probabilities, expanding the number of seemingly value-maximizing choice options ad infinitum.23

This critique was echoed in specific criticisms of the powerful predictive outcomes like those of Bueno de Mesquita (1985), with the authors’ “heroic assumptions” drawing general skepticism (McDermott, 2004, p. 55). Further criticism emerged regarding the theory’s assumption of coherence and consistency across a decision-maker’s choices, as scholars argued that individuals struggle to satisfy both the coherence and consistency dimensions based on domain-specific variation; time is fluid rather than finite, contrary to the assumption of long-standing preferences (Mellers et al., 1998). Similarly, (Gigerenzer, 1991, 1996) highlighted the inaccuracy of assuming consistency and coherence over time by reformulating the concept of rationality as ‘good judgment’—showing that a product of content, laws, principles, and axioms that is domain-specific and adaptive could actually be a better predictor of a decision-maker’s choices (Cosmides & Tooby, 1996; Gigerenzer, 1996; Mellers et al., 1998).24

A third assumption that drew ire was the belief that evaluators and decision-makers agree on what constitutes a correct response (Frisch & Clemen, 1994; Mellers et

23 Mellers et al. (1998) reduced the critique to the most traditional expected utility theory model problem—the Monty Hall problem in which contestants on the famous Let’s Make a Deal television program attempt to select a prize from among three doors in two phases—by pointing out that the problem “has multiple solutions, depending on one’s assumptions about Monty” (p. 449).
24 Similarly, Arrow (1951)’s theorem suggested that even when individual preferences were complete and transitive, generalized group preferences did not necessarily follow the same pattern—such that the overall influence of EUT in political science applications might be distinctly limited.
al., 1998). Similar to the original critique arguing that there is rarely ever a single correct response and that many tasks have multiple good solutions (von Winterfeldt & Edwards, 1986), this challenge called evidential support of the theory into question by highlighting the potential inconsistency between experiment subjects’ view of the best choice and experimenters’ view of the best choice (Mellers et al., 1998). It is possible in any study that respondents believed they were choosing the value-maximizing choice whereas experimenters saw irrationality, or vice versa. Finally and perhaps most importantly, EUT cannot offer a theory of how preferences originate. It is not a failure of the logic per se, but rather a reality of the model: it emphasizes the study of how behavior follows from a set of fixed preferences, not where those preferences come from (McDermott, 2004).

Each of these critiques raised a fundamental theoretical limitation of EUT that it was unable to address. Yet, because the data remained relatively robust over time, the theoretical challenges were not particularly problematic—until Allais (1953) executed his seminal gambling experiment and published the results in the 1950s. Contrary to the predictions of EUT, Allais demonstrated that individuals consistently made selections based on an independent event unrelated to probability; when offered two choices of equal expected utility, an intervening factor led them to significantly and consistently prefer one option to the other (see Allais, 1997). In other words, some additional variable shaped individuals’ choices more than just probability and value. By offering strong empirical evidence confirming the violation of EUT’s assumptions, a vast body of research began to form surrounding theoretical alternatives.
Prospect Theory

Prospect theory emerged as the primary rational choice-oriented alternative to EUT. Building on accumulating evidence of behavioral violations of EUT similar to the Allais Paradox, Kahneman and Tversky (1979) pioneered a model of individual choices that allowed for subjectivity and adaptivity based on risk perceptions. Prospect theory argues that perception of risk influences how people make decisions such that people tend to be risk-averse with respect to gains and risk-acceptant with respect to losses—as Levy (1996) explains, “the pleasure people get from unexpectedly finding $10 is less than the pain they suffer from losing $10” (p. 175; see also Jervis, 1992; Kahneman & Tversky, 1979; Levy, 1992; Quattrone & Tversky, 1988). The theory explains this phenomenon through a two-phase process of editing and evaluating (Kahneman & Tversky, 1979; Levy, 1996). In the editing phase, an actor identifies a ‘reference point’ (traditionally the status quo) that frames their decision, the choices available to them, and the values and probabilities of each outcome (Kahneman & Tversky, 1979; Levy, 1996). In the evaluating phase, by this ‘framing effect,’ the actor computes the overall value of their options based on the combination of value and likelihood and makes their selection (Levy, 1996). The explicit recognition that “choices are influenced by how prospects are... represented in terms of losses versus gains” via the reference point means that the magnitude of the framing effect is determined by the transparency of the choice itself (Trepel et al., 2005, p. 39; see also Levy, 1996). This makes it a theory “concerned with the importance and impact of the environment on the person” above
all else (McDermott, 2004, p. 293). The situational context and how it is interpreted predicts specific actions.²⁵

Yet, though the results of testing prospect theory are often described as “exceptionally large and reliable,” one-third of participants in the original experimental research on prospect theory did not exhibit the predicted framing effects that otherwise dominated the results (Lerner & Keltner, 2001, p. 148; see also Kahneman, Knetsch, & Thaler, 1991; Kowert & Hermann, 1997; Levy, 1992, 2003; Mercer, 2005; Quattrone & Tversky, 1988), and several re-tests found additional results that did not follow predicted outcomes (Fagley & Miller, 1997; Highhouse & Yüce, 1996; Weber & Milliman, 1997; Xie & Wang, 2003). A number of scholars highlighted that prospect theory offers no theory of its most important element—framing. This critical part of the theoretical construct is most often exogenously defined; in almost all experimental evidence, administrators define the frame for subjects, measuring behavioral responses while refusing to allow for variation in reference point (Tversky & Kahneman, 1992). The nature of the frame itself as a fluid variable is completely unaddressed in favor of evaluating problems “where it is reasonable to assume either that the original formulation of the prospects leaves no room for further editing or that the edited prospects can be specified without ambiguity” (Kahneman & Tversky, 1979, p. 275). The

²⁵ It is the attention paid to these situational constraints of risky action that made prospect theory so appealing to political science and, in particular, international relations. A number of case studies exist examining actors and nation-states’ risk preference points and subsequent decisions (Berejikian, 2002; de Mesquita, McDermott, & Cope, 2001; Fanis, 2004; Farnham, 1994; Fuhrmann & Early, 2008; Haas, 2001; Levi & Whyte, 1997; Levy, 2003; McDermott & Kugler, 2001; Weyland, 1996).
question of “whether people accommodate to change, in what direction, how quickly, and under what conditions” is ignored—making framing effects “highly subjective, poorly understood, and basically unexplored” (Levy, 1996, p. 184; Druckman, 2004; Riker, 1995; Wittman, 1995). The results may have indicated that framing effects may exist, but no demonstrable evidence existed showing where the frame originates or how it changes.²⁶

Given that the theory inherently neglects the individual characteristics of the decision-maker and that its testing results showed a substantial amount of unexplained variance in outcomes, a fundamental question emerged: what beyond typical cognition makes up an individual’s reference point? Decision-making scholars relied less wholly on rational choice, and began to interact with a number of independent research agendas on emotions, personalities, and belief systems in order to begin to unpack the concept of the ‘framing effect’ and consider how individual-level characteristics may answer that question.

²⁶ It should be noted that, as Druckman and McDermott (2008) highlight, some progress is being made. A number of variations on prospect theory grew in recent decades that attempt to explicitly identify the variables that interact with individuals’ preferences, choices, and directions/speed of those choices, and in doing so offer a theory of framing and editing. Some studies to date reveal interesting, if micro-level, framing tendencies—for instance, the weakness of gain/loss framing effects for men (Fagley & Miller, 1997) and those with high cognitive ability (Stanovich & West, 1998).
Explaining the Framing Effect: Alternatives to Prospect Theory

Belief Systems and Operational Codes, Personality, Interpersonal Generalization Theory, and Poliheuristic Theory

Several alternatives to the traditionally rational explanations of EUT and prospect theory emerged over time, advancing the overall research on framing effects and decision-making in political science. One of the most significant bodies of work focuses on operational codes (Leites, 1953; George, 1969; Holsti, 1962, 1967), unique ‘prisms’ through which people’s beliefs shape their current environment and choices.\(^{27}\)

Based on work by Leites (1951, 1953), the prism is posited to translate views about the fundamental nature of political life (philosophical beliefs) and the best means for achieving political ends (instrumental beliefs) into one coherent structure that suggests “norms, standards, and guidelines that help the perceiver choose among strategies and tactics” — thereby recasting incoming information, constraining alternative options and predicting specific choices (Larson, 1994, p. 22; see also Converse, 1964; George, 1969; George & McKeown, 1985; Holsti, 1977; Snyder, Bruck, & Sapin, 1954; Walker & Schafer, 2006).\(^ {28}\) An original series of tests measuring the empirical validity of the

\(^{27}\) The term ‘operational code’ was originally coined by Merton (1940) to explain the overall collection of values and responses that an individual shares with the world (Walker, 1990).

\(^{28}\) Specific assumptions of the operational code belief systems include: that decision-makers “vary significantly in choice propensities, beliefs, and personality traits,” that “these characteristics structure the decision-maker’s range of goals and shape the analysis of alternatives,” and that as much as possible, “a policymaker’s choices are selected which are consistent with these principles and constitute the boundaries of rational behavior for the decision-maker” (Walker, 1990, pp. 406-407; Walker & Schafer, 2006). The prism’s effects are argued to be most salient when information is either
operational code’s predictions in political science showed mixed results in its application (Stuart, 1979; Walker, 1977; Walker & Falkowski, 1984), including showing changes in beliefs over time (Walker, Schafer, & Young, 1998), while some later testing showed the stability of instrumental versus philosophical beliefs (Schafer & Gassler, 2000). The mixed results revealed one of the fundamental tensions that would emerge within operational code and belief systems research: the specification of cognitive versus characterological inputs of the model. While George (1969, 1979) and Holsti (1970, 1977) originally emphasized the cognitive—i.e., beliefs—focus of operational code belief systems, Walker (1983, 1990, 1995) tapped into new approaches in cognitive psychology to reformulate operational codes as multiple “states of mind” that also included character-based inputs—i.e., motivations like needs for affiliation, power, and achievement (Walker, 1995, p. 703).\(^{29}\) A number of additional studies similarly used this dual approach of character and cognition (Walker & Falkowski, 1984).\(^{30}\)

scarce or overwhelmingly available, and per Holsti’s argument of cognitive consistency (in which beliefs continually reinforce each other), they become consolidated and persist over time (Holsti, 1976, 1977).

\(^{29}\) To be clear, even George (1979) acknowledged that the goal and outcomes of the operational code would never seek to perfectly explain behavior, precisely because it recognizes the influence of real-time thoughts and feelings. He likened the codes to “one variable cluster within a rich, complex causal framework for explaining decision-making” (George, 1979, p. 104).

\(^{30}\) Walker (1983)’s main argument was that early childhood experiences gave individuals personal motives prior to their adoption of any belief system and that thus, once a belief system was adopted, environmental stimuli that activate said belief systems could tap into personal motivations that enhance the cognitive rigidity of the belief system itself. This significant reformulation thus assigned “co-equal status” to beliefs and motivations as sources of behavior, suggesting that their possibly linear but ultimately interactive relationship was what guided decision-makers the most (Walker,
Theories of belief systems converged neatly with the long-standing psychological tradition of personality theorizing. Defining personality as a trans-situational array of people’s traits, motives, cognitions, and social context, these scholars bridging the personality and foreign policy divide argued that personality factors affect how leaders weigh their goals and preferences, respond or resist cues, interpret stimuli, and manage emotions in a stable and predictable manner (McCrae & Costa, 1984; Mondak, 2010; Winter, 2003; Winter & Barenbaum, 1999). ‘Traits’ emerged as the primary proxy for personality in a number of taxonomies, defined generally as “dimensions of individual differences in tendencies to show consistent patterns of thoughts, feelings, and actions” (McCrae & Costa, 1990, p. 23). Based on correlative results from the early trait-testing, most researchers soon accepted that five specific factors underlie the majority of personality traits—neuroticism, extraversion, openness, agreeableness, and conscientiousness—and the NEO-PI-R became the default standard for assessing the personality traits of leaders (Allik & McCrae, 2002; Costa & McCrae, 1992; Nicholson, 1995, p. 702). In short, this research began to explicitly tap into the lessons of both the rational choice and affective research; it was the first to explicitly acknowledge that one decision-maker acts based on a complex interaction of both the cognitive (rational) and motivational (affective) fields.


Examples of scales used to assess traits include the Guilford-Zimmerman Temperament Survey (Guilford & Zimmerman, 1949); the California Psychological Inventory (Gough, 1987); and the Minnesota Multiphasic Personality Inventory (Hathaway & McKinley, 1943).
Soane, Fenton-O’Creevy, & Willman, 2005).\(^{33}\) However, the definitions employed by researchers varied widely, the highly utilized self-report measures could allow for extensive biases to permeate studies, and the literature’s emphasis on traits alone as the primary proxy of personality dismissed a number of important variables that could be essential to determining its strength as a frame (McDermott, 2004).\(^{34}\)

Yet, perhaps the largest critique of personality theorizing is its emphasis on identification of traits rather than theorizing the process by which they determine outcomes. In response, researchers parsed out which factors (and facets) underwrote the majority of decision-making behaviors, with many gravitating toward risk propensity, the “tendency of a decision maker either to take or to avoid risks” (Sitkin & Pablo, 1992, p.12).\(^{35,36}\) Yet, finding such results on a macro-level continued to be elusive,

\(^{33}\) Alternative models include Eysenck’s three-factor model (Eysenck, 1991) and Digman’s two-dimensional model (Digman, 1997).

\(^{34}\) For instance, ‘risks’ as defined by personality psychologists involves observing practices such as driving or participation in thrill-seeking sports (Cogan & Brown, 1999; Jonah, 1997; Smith & Heckert, 1998; Zarevski, Marušić, Zolotić, Bunjevac, & Vukosav, 1998) while ‘risks’ as defined for traditional decision-making research is based on hypothetical situations with costs and benefits.

\(^{35}\) A variety of personality facets are connected to risk propensity throughout the literature, but the primary focus has been ‘sensation seeking’ as well-validated proxy, along with guilt, aggression, sociability, anxiety, and need for control (Nicholson et al., 2005; Zuckerman & Kuhlman, 2000).

\(^{36}\) The central tenets of research on risk propensity and personality are first, that individuals have inherent variations of their risk propensity within their personality (i.e., unlike prospect theory, risk propensity is a characteristic of the individual rather than of the situation), and second, that those propensities are stable over time (Highhouse & Yüce, 1996; Hollenbeck, Ilgen, Phillips, & Hedlund, 1994; Nicholson et al., 2005). A number of researchers actually tested whether personality-specific risk dispositions influence the frames from which individuals make choices (Kam & Simas, 2010; Kowert & Hermann, 1997; Lauriola & Levin, 2001; MacCrimmon & Wehrung, 1986; Olson & Suls, 2000; Soane & Chmiel, 2005; Zuckerman & Kuhlman, 2000).
suggesting that individuals may merit more attention than their traditional treatment as proverbial black boxes, but that neither operational codes nor personality research have been able to definitively answer the question of how individuals make choices.  

A third alternative to prospect theory, an early branch of first-image research and foreign policy analysis known as Interpersonal Generalization Theory (IGT), directly translated the beliefs of individuals to interactions at the systemic level. This research suggested that individuals “relate to other states in ways that are straightforward extensions of their styles of relating to people in their daily lives” (Shepard, 1988, p. 92). A number of authors exposed links between how individuals connect their interpersonal behavior to foreign policy preferences. For instance, Christiansen (1959) found that individuals who tend to blame and threaten others in interpersonal disputes do the same to other nations in international conflicts, while Eckhardt and Lentz (1967) found that individuals who believe in authoritarian interpersonal measures like strict parental discipline of children tend to prefer similarly extreme and punitive responses in international conflict, such as advocating use of nuclear weapons during serious disputes. Gladstone (1955) found that people reliably treat international threats the

Vertzberger (1995) found that the inherent risk dispositions of leaders’ personalities “led them to consistently prefer risk-prone behavior over risk-averse behavior (or vice-versa) irrespective of situational contexts” related to losses and gains (p. 370). For instance, Weber and Milliman (1997) offer an explanation of risk propensity suggesting that while individuals often did exhibit specific outcomes related to risk, their reported attitude towards risk remained stable, such that it was possible for an individual “to be risk seeking in some areas of one’s life and risk averse in others while having a relatively consistent view of risk” (Fagley & Miller, 1997; Nicholson et al., 2005; Weber & Milliman, 1997). In other words, they allowed for consistent personality traits to exist, without actually affecting choice.
same way they treat interpersonal threats, while Lutzker (1960) found that people who are more cooperative in individual interactions were more likely to be internationalist on foreign policy scales. However, the articulation and testing of IGT appears to have fallen by the theoretical wayside as attention in individuals waned and sophisticated models of state interaction grew in international relations research. Indeed, no recent studies engaging with IGT have been conducted, as the ideas were arguably integrated into broader theories of personality research.

Finally, poliheuristic theory is another research program often contrasted against prospect theory, designed to capture both the cognitive and non-cognitive elements of individual decision-making in the international system. It focuses on process validity rather than the pairing of assumptions to outcome characteristics of rational choice theorizing, and is explicitly designed to incorporate heuristic elements into rational structures—and in doing so answer the ‘how’ and ‘why’ questions of policymaking (Mintz, 1997; Redd, 2003). The foundational assumption of poliheuristic theory is that decision-makers use more than one strategy to arrive at a choice (Mintz, Geva, Redd, & Carnes, 1997). It posits that individuals undertake a two-step process of decision-making wherein they first ‘screen’ initial decision options available to them based on some sort of dimension—i.e., they evaluate options based on an organizing theme (Mintz et al., 1997; Ostrom, Lingle, Pryor, & Geva, 1980; Redd, 2003). Then, in a second

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38 The organizing theme is noncompensatory, meaning that when an individual chooses to evaluate multiple options based on a chosen dimension, an option scoring highly on other dimensions cannot compensate for a low score on the dimension chosen—it will still be eliminated (Ford, Schmitt, Schechtman, Hults, & Doherty, 1989).
stage, the individual transitions from a dimension-based evaluation to an alternative-based evaluation: they sequentially evaluate all dimensions of an option, compare those evaluations across options, and select a decision based on a standard rational choice evaluation of minimizing losses and maximizing gains (Geva & Mintz, 1997; Mintz, 1993; Mintz et al., 1997; Sniderman, Brody, & Tetlock, 1991). In short, in stage one individuals use mental shortcuts to appraise along a single dimension. Then, in stage two they undertake the more complex analysis in a manageable decision matrix, echoing the lessons of rational choice theories (Redd, 2003; Tetlock, 1992; Tetlock & Boettger, 1989).

Experimental evidence from cohorts tested at Texas A&M University (Mintz & Geva, 1994; Mintz, Geva, & Redd, 1994) and the U.S. Air Force Academy (Mintz et al., 1997) offered some of the earliest developmental data on the procedural operations of poliheuristic theory. Further tests suggesting its accuracy included case study explanations of U.S. actions in Vietnam (DeRouen, 2003), Pakistan’s nuclear weapons test (Sathasivam, 2003), Syrian peace decisions (Astorino-Courtois & Trusty, 2003), and the U.S. decision to invade Iraq in Gulf War I (Mintz, 1993), while large-scale quantitative studies of the theory’s applicability lend some support for the theory across decades of international crisis behavior analyses (DeRouen & Sprecher, 2004). No broad-based critiques of both the theory and results of the poliheuristic approach have emerged, precisely because it is designed to allow for wide amounts of variation. In

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39 Note that in each stage, the strategy by which an individual simply eliminates options and cognitively evaluates costs and benefits is not fixed. Instead, as Mintz et al. (1997)
leaving this wide opening, the poliheuristic theory of foreign policy analysis research sets the stage for a vast amount of specific theories to emerge based on elements of individual decision-makers—including their levels of stress (Maoz, 1997) and level of familiarity with an issue (Mintz & Geva, 1997), as well as the situations they face, including the ambiguity of the task (Beach & Mitchell, 1978) and time pressure (Ford et al., 1989).

Affective Theories of the Individual

Interestingly, all of these prior studies examining framing effects in foreign policy hover around the concept of non-cognitive appraisals affecting and/or guiding ultimate cognitive choice, but with an almost complete lack of engagement with the non-cognitive organization and operation of the brain. Put simply, they are ‘right’ to incorporate non-cognitive elements as an initial frame on cognitive evaluation, but may be ‘wrong’ in their woefully underspecified considerations of how affective structures actually operate within this process. This reluctance to engage with emotion is understandable, given the long-standing controversy throughout the decision sciences

highlight, “[the procedures and rules] vary depending on such intervening factors as the domain in which the decision-maker operates, his or her goals, and other situational constraints” (p. 554). In short, the assertion is simply that first, some simplified unidimensional noncompensatory evaluation process occurs and second, some cognitive evaluation of the costs and benefits of decision alternatives occurs, and a decision results—which dimensional noncompensatory and cognitive evaluative processes are chosen remains unspecified.

40 There is a small set of very recent exceptions, including McDermott (2004), Renshon et al. (2017), and Stanley (2018), that are elaborated upon further in Section II.
over how emotions are defined in the mind (Davidson, Scherer, & Goldsmith, 2003; Siegel, 2012). Yet, given the mountain of accumulated evidence suggesting its powerful role, “…the common distinction between cognition and emotion is artificial and potentially harmful to our understanding of mental processes” (Siegel, 2012, p. 148). In contrast to the controlled cognitive processes that were the hallmark of economics research, emotions research introduced automatic emotional responses as a key factor in decision-making (Schneider & Shiffrin, 1977; Paulus & Yu, 2012).

The core argument of the research was rooted in ontogeny and phylogeny. Ontogenetically, a number of authors highlighted how human infants ‘know’ how to express emotion well before they have developed cognitive verbal and processing skills—in fact, they are able to imitate emotional expression at just twelve days of age, well preceding cognitive communication (Izard, 1978, 1979; Meltzoff & Moore, 1977). More primitively, scholars put forward a phylogenetic argument that the limbic system developed prior to the cortex—i.e., the neurological structures mediating affect were in place well before the modern forms of communication, language, and thinking (Zajonc, 1980).

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The idea originated at the turn of the twentieth century, as famed theorist Wilhelm Wundt argued that “when any physical process rises above the threshold of consciousness, it is the affective elements which as soon as they are strong enough, first become noticeable. They begin to force themselves energetically into the fixation point of the consciousness before anything is perceived of the identical elements... the clear apperception of ideas in acts of cognition and recognition is always preceded by feelings” (Wundt, 1907, n.p.; Zajonc, 1980). It was a theoretical approach that remained in the minority until decades later, when the pioneering work of scholars like Zajonc (1980, 1984) and LeDoux (1996) led to a collection of theories and tests delineating cognition and affect as two uniquely powerful structures—with reason to doubt the domination of the former over the latter (Bargh, 1984; Ittelson, 1973; Posner & Snyder, 1975).
As Zajonc (1980) articulated, “affective reactions can occur without extensive perceptual and cognitive encoding, are made with greater confidence than cognitive judgments, and can be made sooner”; in other words, whereas cognitive evaluations were true/false determinations, emotions were immediate go/no-go decisions (p. 151). Dodge (1991) echoes this point, arguing that “all information processing is emotional, in that emotion is the energy that drives, organizes, amplifies, and attenuates cognitive activity and in turn is the experience and expression of this activity” (p. 159). Its effects were posited to be near universal—as it categorized the universe into safe and unsafe (good and bad) categories, affect became the root of all psychological behavior and “the major currency in which social intercourse is transacted” (Zajonc, 1980, p. 153; see also Langer, 1967). Furthermore, scholars argued, emotion is durable. Unlike cognition, which could reassign values and probabilities based on reasoning and persuasion, emotional evaluations operated below the level of consciousness and thus proved difficult to reverse (LeDoux, 1996; Zajonc, 1980). It seemed as if humans communicate affect prior to cognition both in evolution and practice, and that they do it broadly and consistently.

These arguments about emotion did not disregard the role of cognition in formulating and selecting choices. Rather, they suggested that emotion serves as a mechanism that could “redirect cognitive processing” when an individual is assessing a threat (Loewenstein et al., 2001, p. 268; see also Simon, 1967). As Zajonc (1980) similarly noted, “in nearly all cases… feeling is not free of thought, nor is thought free of feelings. Considerable cognitive activity most often accompanies affect… thoughts enter feelings
at various stages of the affective sequence, and the converse is true for cognition. Feelings may be aroused at any point of the cognitive process: registration, encoding, retrieval, inference, etc. But this converse relation is not totally symmetrical... affect is always present as a companion to thought, whereas the converse is not true for cognition” (p. 154). When cognition and affect coordinate and compete with one another in the decision-making process, it is affect—and particularly, its intensity—that appears to guide the relationship (Loewenstein, 1996; Loewenstein & Lerner, 2003).

Most research on emotions emphasizes how affect plays “an informational role” in the decision-making process—arguing that it serves as a mediating factor that shapes the inputs of a particular decision, which the individual then cognitively evaluates and selects (Loewenstein et al., 2001, p. 271). For instance, the somatic marker hypothesis from Damasio (1994) suggests that individuals have “an emotional mechanism that rapidly signals the prospective consequences of an action, and accordingly assists in the selection of an advantageous response option” (Bechara & Damasio, 2005, p. 339; see also Damasio et al., 1990).42 In addition, with the seminal work of Johnson and Tversky (1983), some scholars argued that moods influence how individuals assess choices, either by retrieving particular semantic or episodic referents from an individual’s memory (Bodenhausen, Kramer, & Süsser, 1994; Bower, 1981; Forgas & Moylan, 1987; Isen, Shalker, Clark, & Karp, 1978; Kavanagh & Bower, 1985; Mayer, Gaschke, Isen, Shalker, Clark, & Karp, 1978; Kavanagh & Bower, 1985; Mayer, Gaschke, Isen, Shalker, Clark, & Karp, 1978; Kavanagh & Bower, 1985; Mayer, Gaschke,

42 Note that the somatic marker hypothesis is functionally similar to poliheuristic theory; the central difference between the two theories is poliheuristic theory’s initial assessment is posited to be a cognitively-mediated heuristic bias, while the somatic marker hypothesis suggests an affectively-mediated bias.
Braverman, & Evans, 1992; Mayer & Hanson, 1995; Schwarz & Clore, 1983), or by distorting the level of systematic processing that an individual is willing to undertake (Chaiken, Liberman, & Eagly, 1989; Fiske & Neuberg, 1990; Forgas, 1989; Isen & Means, 1983; Petty & Cacioppo, 1986; Schwarz, 1990). The evidence was revealing: happy individuals did indeed rely on cues, stereotypes and general heuristic processing more than non-happy individuals (Bodenhausen, 1993; Bodenhausen et al., 1994; Mackie & Worth, 1991; Schwarz & Bless, 1991), while sad people appeared more sensitive to information and exhibited much more systematic evaluations of costs and benefits (Schaller & Cialdini, 1990; Schwarz, 1990; Weary, 1990; Wenzlaff & Grozier, 1988). Some found that such negative moods induced more positive overall attitudes, such as rally-around-the-flag effects (Way & Masters, 1996).

Smith and Ellsworth (1985) and Lerner and Keltner (2000, 2001) evolved the understanding of affect as an informational input by studying discrete emotions as opposed to global positive/negative moods. They posited that each emotion holds a number of underlying ‘appraisal dimensions.’ As such, when an individual

43 Though most of the emotions research does consider discrete categories of emotions, see Plutchik (1980; 1984) for additional divisions based on primary and secondary emotions.

44 The appraisal dimensions include: pleasantness (defined as how pleasant/unpleasant it feels to experience a particular emotional experience), anticipated effort (defined as how much effort/energy feels necessary during a particular emotional experience), certainty (defined as how certain/predictable or uncertain/unpredictable one feels about what is happening during a particular emotional experience), attentional activity (defined as how much one thinks about a particular emotional experience during it), self-other responsibility/control (defined as how responsible one views one’s self or others for bringing about the events precipitating a particular emotional experience), and situational control (defined as the extent to which one feels the circumstances of a
experiences an emotion, they receive a number of cognitive signals that alter how they view future choices. Experimental results confirmed the appraisal tendency hypothesis: an individual’s emotions are “intimately related to their cognitive appraisals of their circumstances” (Smith & Ellsworth, 1985, p. 831). Based on differences in appraisal dimensions, emotions of the same valence such as anger, anxiety, fear, and distress each led to their own distinct choice outcome (Druckman & McDermott, 2008; Lerner & Keltner, 2001).

All of these lessons have been applied in inconsistent ways to political science research. Importantly, American political psychology has undertaken a niche investment in understanding affective intelligence’s impact of political behavior, largely through the development of Affective Intelligence Theory. The theory is built on a number of encouraging premises—namely, that faster, implicit, pre-conscious, natural assessments considered throughout this dissertation are worthy of more consideration in determining how individuals select choices throughout political science. However, much of the work in this paradigm represents a problematically limited application of some of the affective lessons from the decision sciences, particularly in regards to stress and threat. The authors’ axiomatic assertions that during emotionally-valenced experiences like fear and anxiety individuals will actively seek out new, cognitively-valenced information (Mackuen, Marcus, Nueman, & Keele,
2007; Marcus & MacKuen, 1993), rather than default to implicit intuitive judgments characteristic of non-threatening experiences, fly in the face of the lessons surveyed throughout this dissertation. Similar to the mood research considered above, this research program’s overreliance on treating feelings of stress and threat as discrete emotions that shape cognitive information searches—rather than states that may fundamentally inhibit those cognitive information searches—neglects much of the understanding of the limbic system’s influence considered throughout this Section. Treating discrete emotions as solely an input to a decision-making outcome rather than as an output of a fundamentally more complex process misinterprets some of the lessons derived from neuroscience research. Indeed, as Siegel (2012) helpfully summarizes,

“Let us assume that the familiar end products of emotion—what we usually consider in everyday thinking as the common feelings of anger, fear, sadness, or joy-- are actually not central to the initial experience of emotion. Let us also assume that emotions do not necessarily exist as we may usually think of them: as packets of sensation that can be experienced, identified, and expressed… instead, let’s consider that emotions represent dynamic processes created within the socially influenced, value-appraising processes of the brain.” (p. 148, emphasis in original)

There is limited work connecting emotions to international relations and foreign policy. However, notable exceptions exist, including McDermott’s integration of emotion into traditional rationality paradigms of political science (McDermott, 2004). More recently, work from Stanley (2018), Renshon et al. (2017), and Hafner-Burton et al.
(2017) has explicitly integrated limbic understandings of affective influences on decision-making into models like bargaining behavior in war.

Overall, this brief survey of research on affective theories of decision-making shows that great strides have been made in positing emotion’s impact on (particularly political) preferences and decision-making—but also that many questions remain. The reliable theme that emerges from neuroscience’s understanding of emotion (and from political science’s limited application of those lessons) is that “emotion is found throughout the entire brain” (Siegel, 2012, p. 147)—individuals have a consistent, if complex, emotional frame that mediates their overall decision-making. It clearly works in close concert with a cognitive frame, either by exacerbating the effects of a cognitive judgment (as was the case with moods affecting overall assessments) or by predetermining cognitive judgments altogether (as was the case in the appraisal tendency theory).

**Dual Systems Process of Decision-making**

At this stage in the survey of research on cognition and affect in decision-making, the main consensus that emerges—both in the decision sciences and in political science specifically—is that enormous overlap exists between these two concepts and their impact on information processing and decision-making. Indeed, as the use of fMRI and PET technologies expanded to behavioral decision research and created the groundbreaking field of ‘neuroeconomics,’ various forms of evidence have emerged documenting the many specific cognitive and affective regions of the brain activated
when an individual uses their typical homeostatic preference frame. Though it has thus far been difficult to specifically determine causality among the multiple interacting individual parameters, regional activity and other clues are beginning “to elucidate... our understanding of how the brain works” and which areas within it contribute to decisions (Camerer, Loewenstein, & Prelec, 2005, p. 15; see also Fehr & Camerer, 2007).45

In particular, the theoretical and neurobiological reality explored throughout Part 3 is that as Pessoa (2008) describes, “complex cognitive-emotional behaviours have their basis in dynamic coalitions of networks of brain areas, none of which should be conceptualized as specifically affective or cognitive” (p. 148). Per this functionalist argument (Parrott & Schulkin, 1993), decisions are instead a product of cognitive-emotional interactions in highly-connected brain regions called ‘hubs,’ which “are critical for regulating the flow and integration of information between regions” (Pessoa, 2008, p. 148). These hubs are functionally equivalent to what Siegel (2012) considers information processing ‘modules,’ wherein the brain undertakes a repeated pattern of activity over time that creates the multiple states of mind we exhibit any given moment or day. Each of these many modules that define our different ‘selves’ have their own

45 Some authors provide evidence indicating possible cognitive roles (see Baird & Fuselang, 2004; Barraclough, Conroy, & Lee, 2004; Bechara, 2005; Dagleish, Dunn, & Mobbs, 2009; Sanfey, Rilling, Aronson, Nystrom, & Cohen, 2003), affective roles (Calder, Lawrence, & Young, 2001; Carr, Iacoboni, Dubeau, Mazziota, & Lenzi, 2003; Preuschoff, Quartz, & Bossaerts, 2008), and overlapping cognitive/affective roles (Amat et al., 2005; Camerer et al., 2005; Dagleish et al., 2009; Fehr & Camerer, 2007; O’Doherty, Kringelbach, Rolls, Hornak, & Andrews, 2001; Rilling et al. 2002; Rilling, Sanfey, Aronson, Nystrom, & Cohen, 2004; Tabibnia, Satpute, & Lieberman, 2008; Zink, Pagnoni, Martin, Dhamala, & Berns, 2003).
“relatively specialized and somewhat independent modes of processing information and achieving goals,” such that individuals are a complex assemblage of observed cognitive and emotional connections, which handle different inputs in different ways (Siegel, 2012, p. 211).

The good news is that these hubs explain all of the outcomes thus far observed throughout this review. The dominance of rationality in some scenarios, the complex interplay of rationality and emotion in others, and the dominance of emotion can all be explained by this concept of modular self-organization, wherein we are all a product of unique and complex ‘hubs’ of emotional and cognitive connections. The strong evidence both in favor of and questioning prospect theory, belief systems, personality research, and poliheuristic theory all can be attributed to this likelihood that some hubs operate according to those theories and some operate in contrast to them. The bad news is this consensus from the literature potentially hampers attempts construct a falsifiable general theory of cognition and emotion in decision-making. If each information processing module is a product of both variable cognitive and variable affective inputs, can there be any predictable pattern to decision-making?

Fortunately, the answer lies in the hierarchy in which the survival brain and thinking brain interact. Building on the widely-accepted explanation detailed in Stanovich and West (2000) (see also Barbey & Sloman, 2007; Evans, 2007; Evans & Over, 1996; Kahneman, 2011; Kahneman & Frederick, 2002; Sloman, 1996; Stanovich, 1999; Kahneman 2011), there is a general consensus that decisions across all ‘hubs’ are made in the context of two processes: System 1 and System 2 decision-making (also note that
<table>
<thead>
<tr>
<th>Dual Process Author</th>
<th>System 1</th>
<th>System 2</th>
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<tbody>
<tr>
<td>Sloman (1996)</td>
<td>associative system</td>
<td>rule-based system</td>
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<tr>
<td>Evans (1984)</td>
<td>heuristic processing</td>
<td>analytic processing</td>
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<tr>
<td>Evans &amp; Over (1996)</td>
<td>tacit thought processes</td>
<td>explicit thought processes</td>
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<tr>
<td>Reber (1993)</td>
<td>implicit cognition</td>
<td>explicit learning</td>
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<td>Levinson (1995)</td>
<td>interactional intelligence</td>
<td>analytic intelligence</td>
</tr>
<tr>
<td>Epstein (1994)</td>
<td>experiential system</td>
<td>rational system</td>
</tr>
<tr>
<td>Pollock (1991)</td>
<td>quick and inflexible modules</td>
<td>intellection</td>
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<td>Hammond (1996)</td>
<td>intuitive cognition</td>
<td>analytical cognition</td>
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<tr>
<td>Klein (1998)</td>
<td>recognition-primed decisions</td>
<td>rational choice strategy</td>
</tr>
<tr>
<td>Johnson-Laird (1983)</td>
<td>implicit inferences</td>
<td>explicit inferences</td>
</tr>
<tr>
<td>Shiffrin &amp; Schneider (1977)</td>
<td>automatic processing</td>
<td>controlled processing</td>
</tr>
<tr>
<td>Posner &amp; Snyder (1975)</td>
<td>automatic activation</td>
<td>conscious processing system</td>
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(see Stanovich and West 2000, p.659)

**FIGURE 3. Multiple Versions of Dual Systems Theories of Decision-making.**

these systems are categorized according to a number of names, as evidenced in Figure 3) (Epstein, 1994; Evans, 1984; Evans & Over, 1996; Gigerenzer & Regier, 1996; Sloman, 1996). System 1 decision-making (also known as *survival brain processes*) (Stanley, in press) is the evolutionarily primary decision-making strategy. Build from both the mammalian and reptilian brains (i.e., the limbic system and the brainstem/cerebellum), the survival brain of System 1 is designed to manage and deploy neuroception. This process, wherein the brain exerts unconscious bottom-up effort to “rapidly [scan] the world for opportunities/safety and threats/danger,” motivates approach and avoidance behaviors in individuals and their respective physical and emotional cues.
As Kahneman (2003) summarizes “The operations of System 1 are fast, automatic, effortless, associative, and often emotionally charged; they are also governed by habit, and are therefore difficult to control or modify” (p. 1451). The System 1 process “conjoins properties of automaticity and heuristic processing,” such that assessments are “largely unconscious and relatively undemanding of computational capacity” (Stanovich & West, 2000, p. 658). Indeed, that automaticity means that System 1 survival brain processes are designed to cultivate implicit learning, wherein experiences are unconsciously interpreted, generalized, learned, and consolidated in non-declarative memory. Importantly, what this indicates is: in more dramatic instances of safety/threat perception, and thus higher overall arousal levels, the survival brain is working its hardest to encode information and habituate future decision-making (Bremner, 2002; McEwen & Lasley, 2002; Sapolsky, 2004; Scaer, 2005; Stanley, 2018, in press; Kahneman 2011).

Meanwhile, “the operations of System 2 are slower, serial, effortful, and deliberately controlled; they are also relatively flexible and potentially rule-governed” (Kahneman, 2003, p. 1451). System 2 processes (also known as thinking brain processes) (Stanley, 2018, in press) are evolutionarily much newer than those of System 1, and are the archetypical processes we think of when it comes to analytical intelligence: rules, underlying principles, and computational problem solving. These executive functioning processes “allow us to pay attention and focus; to recall, access, keep in mind, and update task relevant information; and then to use this information to make conscious decisions” (Stanley, 2018; n.p.). In other words, System 2 thinking brain processes access
explicit memory, wherein contextual factors are intentionally committed to learning and memory (Stanley, in press). Furthermore, System 2 thinking brain processes serve another key function: they can modify and/or override the assessments of System 1 (Stanovich & West, 2000), meaning they provide top-down conscious management of the bottom-up unconscious processes that intensify as autonomic arousal increases. The access of executive functioning and encoding of information in System 2 thinking brain processes happens along an inverted-U curve (per the Yerkes-Dodson law) wherein most effective information processing happens at levels of moderate autonomic arousal, and less effective processing occurs at low levels or high levels of stress arousal (when System 1 processes should dominate) (Yerkes & Dodson, 1908). Indeed, System 2 thinking brain processes can actually be impaired and/or damaged when subject to long-term or high arousal levels (Stanley, 2018). Figure 4 provides a basic visual

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46 As noted, in typical homeostatic day-to-day functioning, System 2 processes either align with the assessments of System 1 and/or cognitively moderate/modify those assessments. However, in powerful instances in which System 1 and System 2 come into fundamental conflict—i.e., high-arousal situations in which the powerful cognitive forces of System 2 might otherwise assess and select completely different strategies than the particularly powerful automatic affective processes of System 1—System 2 still retains the unique capacity to override the assessment of System 1 (a hijacking of the typically process). Yet in doing so, System 2’s hijacking of System 1’s decision-making role can actually ultimately disrupt the typical cadence between the Systems such that the body becomes dysregulated in favor of System 1 to compensate—i.e., the original hijacking by System 2 over System 1 can provoke System 1’s hijacking of System 2’s future decisions. The inherently adversarial relationship between the two systems as they cooperate and compete is explored in further detail in Section II’s theoretical discussion.
FIGURE 4. Relationship between Systems 1 and 2.

Illustration of these two systems’ relationship.\textsuperscript{47} Note again that System 1 and System 2 often draw on similar structures within the brain; as Evans and Stanovich (2013) note, the terminology is \textit{not} intended to convey that these processes are located in \textit{separate} neurological systems.

There is an extreme dearth of applications of this System 1/System 2 dichotomy to international relations research, due largely to the perpetually developing nature of the neuroscientific literature on this topic (as well as, arguably, the political science

\textsuperscript{47} In some of the behavioral economics literature, this division of System 1 is actually two processes—perception and intuition. Because “the rules that govern intuition are generally similar to the rules of perception” (Kahneman, 2003, p. 1450)—i.e., because the approach/avoidance processes of both the limbic system and brain stem work closely in concert with one another as part of the overarching survival brain—these processes are intentionally combined in this dissertation.
literature’s commitment to traditional theories of individual decision-making and use of similar, if under-specified, versions of dual systems research). However, two recent studies are of note in this context. The first, from Renshon et al. (2017), applies an approximate application of this System 1/System 2 dichotomy to evaluate how individuals’ affective reaction to changes in bargaining power affects individuals’ abilities to think strategically in both present-day and future contexts. Specifically, the authors use experimental designs and physiological proxy measurements of autonomic arousal to find evidence in favor of the multiple strands of dual systems theory, finding that some arousal leads to rational rejection of expected relative losses while other arousal emotionally ‘short-circuits’ rational decision-making capabilities. Notably, this experiment is not done in the specific context of international affairs; the experiment itself represents a traditional bargaining scenario. However, the authors focus their theoretical discussion on the implications of these lessons for world politics, and in doing so, offer an important step in the literature.

The second major contribution to the use of System 1/System 2 theories in international affairs comes from Stanley (2018), in a detailed consideration of general factors influencing war duration. This theoretical assessment of the micro-dynamics of decision-making under conditions of stress explicitly connects the dots between how essential the homeostatic cadence between System 1 and System 2 processes is to ‘normal’ integration of emotional and cognitive inputs, and provides a thorough assessment of what happens when those processes do not operate under the usually integrative moderate arousal levels. Along with providing a review of some convincing
international relations evidence that circles these theoretical ideas, if not explicitly/similarly applying them (Bar-Joseph & McDermott, 2008; Halperin & Pliskin, 2015; Halperin, Porat, Tamir, & Gross, 2013), Stanley (2018) offers an essential contribution to the understanding of how dual systems theory can, and should, be applied to the many decisions of international relations.

Thus, though relatively new and with limited applications thus far in international affairs, it is this intricate but relatively established theory that provides an intriguing illustration of how political decision-making may take place in the brain. As both the System 1 survival brain and System 2 thinking brain operate in concert, they converge during periods of moderate arousal—allowing for the strong reasoning effects that come from concentration, focus, explicit memory formation, memory consolidation, and overall retrieval (Bremner, 2002; McEwen & Lasley, 2002; Porges, 2003; Sapolsky, 2004; Scaer, 2005; Stanley, in press). In other words, moderate arousal allows for the ‘rationality of emotions’ wherein both affective and cognitive inputs coordinate for the achievement of specific goals (Audi, 1993; Johnson-Laird & Oatley, 1992; McDermott, 2012; Stich, 1990). Thus, this may explain the supporting evidence we have seen in applications of EUT, prospect theory, and poliheuristic theory. In contrast, periods of low or extremely high arousal may explain the more affectively-dominant outcomes of Affective Intelligence Theory, while the changes in integration that occur across levels of arousal explain why all of these theories find instances in which the evidence is strong, as well as instances in which their theoretical applications fail. Though a great deal remains to be understood and evaluated within the dual systems theory of
decision-making, the theoretical convergence and, most recently, acceptance of this model’s comprehensive explanation makes it stand alone in its explanation of how the mind makes decisions generally and in foreign affairs.

Indeed, due largely to the relative recency of the applications of the dual systems theory of decision-making, only a handful of critiques have emerged within the literature. Several authors have taken issue with both the difficulty of translating specific System 1 and System 2 structures into processes (Evans, 2006)\(^{48}\), with some emphasizing that the lack of such specification means “dual-process theories of reasoning exemplify the backwards development from precise theories to surrogates” (Gigerenzer, 2010, p. 739). Indeed, these authors emphasize the need to better specify some elements of the dual systems approach like when and how the systems come into conflict with one another (Evans, 2007). Others have argued that the dual systems processes are not falsifiable to begin with, and that single-process systems might explain findings just as accurately (Gigerenzer & Regier, 1996; Keren & Schul, 2009; Kruglanski & Gigerenzer, 2011). In sum, the general consensus of these critiques is that “evidence for dual processing is ambiguous or unconvincing” (Evans & Stanovich, 2013, p. 232; see also Osman, 2013), due in large part to the fact that different fields’ development of dual systems approaches (as shown previously in Figure 3) have

\(^{48}\) Evans and Stanovich (2013) also explain and respond to a related critique, offering an in-depth explanation of the necessary distinction between the processes and modes of thinking (wherein processes are the System 1/System 2 operations detailed earlier in Part 3, whereas modes of thinking are the cognitive biases and styles that manifest specifically in System 2 processes).
persistently failed to connect with one another (Evans & Stanovich, 2013; Frankish & Evans, 2009). Each of these critiques collectively point to the reality emphasized earlier in Part 3: that a lot of the development of the theory and its testing in this area of research is happening in real-time. Authors have noted how dual systems research has “advanced considerably” since even the beginning stages little more than a decade ago, and that it is a continually “evolving project” (Evans & Stanovich, 2013, p. 237). Refinements and new interpretations will continue to emerge over time, but even with existing (and future) critiques, this broad-based theory has effectively accounted for enough decision-making phenomena (Evans, 2007; Kahneman, 2011; Stanovich, 2011) such that “a very clear theoretical basis for the two-process distinction has now emerged” (Evans & Stanovich, 2013, p. 237).

**Lessons and Limitations**

Any survey of research related to individual choice and decision-making is necessarily complex, based on the varying definitions, expectations, and outcomes of various fields of research. As noted throughout Part 3, most of the major ideas in decision research grew as isolated and often under-appreciated explorations even within their respective fields, let alone across disciplines. It is just within the last few decades that these bodies of work have truly begun to interact with one another, particularly within political science, international relations, and foreign policy. While it is overwhelmingly clear that no one consensus theory of individual decision-making exists, the commonalities that emerged among the research areas surveyed suggest
there is reasonable evidence to believe that individuals can make decisions based on internal variables rather than just external constraints, and that when they do, it is often the product of a complex interaction of consciously controlled cognitive learning and memory access and unconsciously controlled affective information learning and memory access.

As powerful as these interconnections are, it is only within the past few months that the literature on individual decision-making in the international system has begun to integrate them. Integrative theories like poliheuristic theory opened the door by building a comprehensive two-stage process for decision-making specifically within foreign policy that involves both cognitive and seemingly non-cognitive elements, but its inability—or refusal—to integrate more of the lessons of affective research into its model means that its overall inference about complex decision-making is still limited. In contrast, the dual systems process model does accurately engage with the multitudinous lessons from other literatures to introduce a comprehensive affective-cognitive understanding of individual decision-making in international affairs, and in doing so, offers a clear theory for predicting behavior in scenarios of low, moderate, and high autonomic arousal. Yet, this theory’s pursuit of understanding the ‘typical’ process has necessarily meant that aberrations or structural shifts in the dual systems processes have yet to be fully considered by the literature. Furthermore, having only just begun to overcome contentious differences across the cognitive and affective neurosciences, the dual systems model has not yet been fully translated to the social sciences that rely so largely on its lessons. The attempt of political science and, specifically, international
relations to engage with dual systems research has been admirable, but the lack (and in some cases, the shortcomings) of its current applications risk derailing its growth as a convincing individual-level paradigm. A much more nuanced understanding of how dual systems decision-making operates within complex international affairs environments remains a sizeable existing gap within political decision-making research.
Parts 1, 2, and 3 of Section I offered a comprehensive review of three bodies of literature, in the interest of laying bare the relationship between unique military experiences and foreign policy preferences. Each of these independent areas of research on the impact of military service, the human trauma response, and individual decision-making in foreign policy offer varying levels of insights and limitations.

The vast research examining military experiences offered one central lesson: a well-validated correlative relationship exists between health outcomes and military service, specifically in combat. The physical and mental health of both conscription and volunteer eras of veterans appears to deteriorate significantly over time. For conscription-era veterans, PTSD was one of the most prevalent mental health responses to service. A number of physical health degradations also appeared across the population, in addition to a generally high rate of mortality. Volunteer-era veterans showed similarly significant rates of PTSD diagnoses among other, more highly-specific mood disorders, in addition to increased suicidal ideation. Additional scattered evidence across both eras examined in Part 1 suggested military service’s potentially determinative effect on foreign policy opinions, marital stability, and criminal activity, though devoid of clear trends.

In Part 2, medical research on ANS dysregulation offered numerous revelations on the body’s processing of traumatic stressors. After using Polyvagal Theory to explain
how the human body is designed to process trauma, it detailed the several specific conditions—including inhibited activation discharge and chronic stress accumulation, in addition to early-life developmental shifts—that can fundamentally disrupt the system and alter the structural and functional operations of key regions of the brain. The resulting dysregulation revealed a number of psychological, emotional, physiological, and spiritual symptoms, that evidence suggested remain chronic without the use of some validated re-regulatory practices. Ultimately, the review offered a complete understanding of how the mind, brain, and body react to trauma in theory and in practice, and the effects of those reactions.

Meanwhile, the study of individual decision-making in international relations and its relationship with foreign policy in Part 3 offered detailed evidence about the relationship between cognitive and affective elements of decision-making. After offering evidence from rational choice theories about how individuals evaluate the costs and benefits of certain decisions, it provided evidence from studies of emotions detailing the ways in which affect can preempt cognition. It then considered the only theories to successfully integrate these lessons, ultimately drawing on lessons from neuroscience’s dual systems theory to offer a true comprehensive model of all of the complex cognitive and affective processes observed throughout social science applications.

Of course, in addition to the insights gleaned from these distinct research programs, a number of very distinct limitations emerged. In Part 1’s consideration of military service, the overwhelming gap left behind was clear: there is no explanation for
how military service impacts issues like individuals’ health and preferences. After early theories of socialization falsely conceptualized a formative culture of the military yet had no answer for methodological issues of self-selection, scholars simply left behind causal theorizing. Though numerous correlative insights emerged from this body of research as significant, the results are crippled by this inability to draw a specified causal connection. Without a theory of how military service leads to the observed outcomes, this body of research is limited to descriptive understandings.

Part 2 offered a similarly problematic limitation inherent in research on the human trauma response. Staying true to the traditions of medical research, this body of work does not offer a theory of what happens after ANS dysregulation sets in. It provides a detailed symptomatology of such dysregulation, including increasingly specified hyperaroused and hypoaroused symptomatologies, but fails to conceptualize what the complex emotional, psychological, physiological, behavioral, and spiritual symptoms of ANS dysregulation mean for broader actions. The dysregulated individuals’ relationship with the world around them remains mostly unexplored, and as a consequence—much like for military service—our understanding of the generalized influence of trauma on the human experience falls short.

Finally, the research on individual political decision-making considered in Part 3 revealed a delicate decision-making frame of affective inputs, simplifying heuristics, and cognitive evaluations that, though it incorporates lessons from rational choice and affective theories in a way no other theory does, is still growing in its own specification. As a result, this dual systems theoretical approach has yet to be applied frequently or
thoroughly in much of the existing political science literature—and thus, we still do not fully understand how it operates and, in unique instances, how it might change and deviate from the expected dual systems balance. Improving the frequency and quality of the original dual systems theory’s application in international relations remains a clear need, as does understanding how and when this theory’s balanced operations might be disrupted.

The collection of limitations demands more rigorous research in each of the narrow research fields examining the impact of military service, the human trauma response, and individual decision-making in the international system. However, the problem revealed by Parts 1, 2, and 3 is not just that we are missing important data from the three distinct research questions; by not incorporating their insights together, we’re missing an entirely new research question. Autonomic nervous system dysregulation of people who experience unresolved trauma alters the structural and functional operations of the brain, resulting in similar psychological and physiological changes as those that reliably correlate with military service. Affective and cognitive elements comprise the two systems that reliably guide individuals’ political decision-making, using the same brain regions as those reliably altered during ANS dysregulation. The fundamental question posed by this dissertation emerges independent from but reliant on all three fields: might military service’s stress exposure cause ANS dysregulation, such that it reliably alters/predicts decision-making structures? If so, what outcome is predicted that might finally answer what military service causes? The clear potential for overlap among some of these cutting edge bodies
of literature suggest that we may finally be able to start answering what military experience means for decision-making.

It order to establish and test the causal sequence through which traumatic military experiences may cause ANS dysregulation and thus subsequently determine the structure of and outcomes from an individual’s foreign policy decision-making frame, two linkages must be established. First, we must postulate how traumatic military experiences reliably cause ANS dysregulation in military populations. Second, we must postulate what decision-making frames and subsequent policy choices emerge following ANS dysregulation. Once we articulate these arguments and test them, we will have a first attempt at a comprehensive theory of the impact of military service on foreign policy preferences. It will better capture the variety inherent in military service and combat, it will add a behavioral component to research on the effects of dysregulation, and it will introduce a new, overlooked version of the dual systems process argument to international relations. Yet, most importantly, it will answer the question that has until now not even been asked: does combat affect foreign policy preferences, and if so, how?
The lessons that emerged from Section I’s comprehensive study of literature on military service, trauma, and individual preferences and decision-making were fundamentally interesting. Health and military service are significantly correlated. A number of neurological changes were shown to occur after the improper processing of traumatic events, which caused a multitude of physiological, psychological, and spiritual symptoms. Individuals use both affective and cognitive structures when they make their decisions. Yet, the questions that remained were most powerful: what does military service mean? What are the effects of traumatic dysregulation beyond clinical symptoms? What do decision-making systems predict in foreign policy, and can they change?

In Section II, I seek to tell one overarching story of how traumatic military experiences may cause autonomic nervous system dysregulation in veterans, such that the dysregulation could reliably predict their foreign policy preferences. It answers each of the gaps left in the individual bodies of literature while using their key insights to chart a new research course on the impact of combat trauma on political behavior. Two linkages must be demonstrated in order to illustrate this causal process, as reflected in Figure 5. I first must demonstrate how traumatic combat experiences are particularly likely to cause dysregulation of the ANS by providing significant opportunities for both
FIGURE 5. Theory of Combat-Related Dysregulation and Policy Preferences.

inhibited activation discharge and chronic accumulation of stress activation. Then, I must demonstrate how ANS dysregulation may predictably change a veteran’s foreign policy preferences, by fundamentally altering the structure of the dual systems that inform affective and cognitive judgments.

Section II thus proceeds as follows. First, I detail how traumatic military experiences can cause ANS dysregulation. I begin with a consideration of the commonality of exposure to intense experiences during combat service, providing reliable evidence that combat veterans are at some point subjected to traumatic conditions.49 I then make the argument that the cultures of the social and command hierarchies inherent in military service bind individual servicemembers such that after

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49 As elaborated upon in further detail throughout Sections II and III, this dissertation intentionally focuses on combat and its experiences as the central source of stressor exposure and, potentially, dysregulation during military service. Importantly, this is not to argue that all combat service is necessarily dysregulating, nor to suggest that non-combat service is not dysregulating. Future research should expand upon the theory included here to more broadly theorize how military service beyond and in addition to combat may reflect, or challenge, the dysregulation-related hypotheses examined throughout the rest of this dissertation.
experiencing such traumatic situations, the capacity for activation discharge considered in Part 2 of Section I is inhibited. I continue my argument by exploring how the repetitive tours of duty and irregular tactics of modern warfare produce a second condition for ANS dysregulation, chronic stress accumulation, without the opportunities for successful re-regulation. After briefly considering how early life experiences and re-regulatory options may further interact with this combat service, I conclude with a clear hypothesis: if a veteran is subject to traumatic combat experiences, then they may be particularly likely to experience the effects of ANS dysregulation.

Second, I explore how ANS dysregulation determines an individual’s decision-making strategies such that it predicts their foreign policy preferences. I initially offer evidence that the regions of the brain subject to structural and functional changes of ANS dysregulation are the same regions that reliably guide System 1 and System 2 decision-making within the validated dual systems process model of decision-making. I then offer an argument that the functional narrowing of individuals’ windows of tolerance via dysregulation transforms the typical two-pronged dual systems process to heavily favor System 1 processing to the neglect of System 2 processing. Importantly, this part of the theory then considers the difficulty inherent in hypothesizing specific hyper- and hypo-arousal symptoms, and instead offers a hypothesis common to both dysregulatory states: namely, that individuals with narrowing windows of tolerance will actively and most commonly seek to avoid/neutralize existing triggers. I then consider how the specific content and context of foreign policy decisions create a stressor-filled dynamic in which that avoidance is likely to be heightened, ultimately
predicting that individuals with dysregulation will prefer neutral, avoidant policy preferences that are decidedly neither interventionist nor isolationist, even when accounting for existing dysregulation and coping strategies. Section II finishes with a summary of the hypotheses that drive the two separate linkages of the causal theory and an overall picture of the causal process posited, and transitions to considering the methodological approach for testing that takes place in Section III.
SECTION II

PART 1

How Traumatic Combat Experiences May Cause Autonomic Nervous System (ANS) Dysregulation

The necessary beginning to establishing a comprehensive theory connecting traumatic combat experiences to shifts in foreign policy preferences is to tell a reliable tale of how combat may be likely to cause dysregulation of the ANS. I argue that combat service reliably exposes individuals to a number of potentially traumatizing experiences, and that some inherent qualities of U.S. military service may be likely to cause inhibited activation discharge and/or the chronic accumulation of stress activation— and prevent their re-regulation—such that they may lead to the dysregulation of the autonomic nervous system.

Combat and Trauma Exposure

Combat reliably exposes individuals to a number of potentially traumatic physical and mental experiences across three general phases of the deployment cycle: predeployment, deployment, and postdeployment (Hosek, Kavanagh, & Miller, 2016; Pincus, House, Christensen, & Adler, 2001).

Predeployment exposure to stressful and/or traumatic situations can begin upon a servicemember’s entry into the military. As considered in Section I, transitioning to the military lifestyle means individuals are stripped of control, removed from familial
support bases, and may face significant punishment if they do not assimilate to new standards of behavior (Cigrang, Todd, & Carbone, 2000; Novaco, Cook, & Saruson, 1983). The basic training process is “purposefully designed to face new trainees with physical, emotional, and cognitive challenges,” with instructors who may rely on intimidation and scare tactics to force psychological adaption to this new standard (Cigrang et al., 2000, p. 48). Later, once servicemembers are assimilated into the institution and preparing for impending deployment, they “receive intensive training on mission-critical operational skills, physical training, and ‘stress-inoculation’ training to habituate them to stressors they may experience during their impending mission” (Jha et al., 2010, p. 55). Underpinned by the idea that unfamiliar/unpredictable scenarios elicit greater stress responses in humans (McEwen & Lasley, 2002; Sapolsky, 2004), stress exposure training forces individuals to practice key skills while facing simulated in-theater stressors, with the goal of increasing familiarity, confidence, and overall comfort with such conditions (Deikis, 1982; Driskell & Johnston, 1998; Kavanagh, 2005; Saunders, Driskell, Johnston, & Salas, 1996). Servicemembers often rehearse combat operations in staged settings like the National Training Center (NTC) at Fort Irwin, where the goal is to push units to their performance threshold of failure by constantly raising the threat and, in doing so, expose key flaws in individuals and units before being downrange. As the director of the NTC said, “The NTC should be hard—in many ways more difficult than actual combat” (Cone, 2006, p. 71).

Furthermore, the physical training (PT) process involves a number of intensive exercises designed to improve servicemembers’ capacity for hauling heavy equipment
and supplies on patrol (Knapik, Darakjy, & Hauret, 2006; Reynolds et al., 2009). As a consequence, significant injuries during such training are common and increasing in number (Grier, Canham-Chervak, McNulty, & Jones, 2013; Knapik et al., 2012; Knapik, 2001; Knapik et al., 2013; Molloy, Feltwell, Scott, & Niebuhr, 2012; Munnoch & Bridger, 2007; Nindl et al., 2007). In fact, research shows that PT injuries may account for 30-50% of all U.S. Army soldier injuries—though these range from low-stress common injuries to higher-stress significant injuries (Loringer et al., 2011; Smith & Cashman, 2002; Tomlinson, Lednar, & Jackson, 1987). Recent research has found especially high rates of rhabdomyolysis—a severe skeletal muscle disorder in which vigorous physical activity causes cellular degradation, such that individuals suffer acute renal failure—in new Army recruits, suggesting that the vigorous physical activity found in basic combat training (and lack of physical resiliency/familiarity with such intense activity) may be to blame (Atias-Varon, Sherman, Yanovich, & Heled, 2017; Hill et al., 2017).

At the same time, as Jha et al. (2010) note, the servicemembers “must psychologically prepare to leave loved ones and face potentially violent and unpredictable situations during their deployment” (p. 55). Individuals complete a Family Contingency Workbook that details their funeral and burial wishes, exposing both them and their loved ones to common anxiety over death and the cognitive burden of managing those mortality concerns (Finkel, 2010).50 Also, individuals with spouses

50 Interestingly, Koob and Davis (1977) found that military officers and their wives have a lower amount of anxiety over death than the general public. However, Lewis, Espe-Pfeifer, and Blair (2000) offered significant evidence that members of occupations routinely subjected to a threat of death often suppress or misrepresent their level of
often experience a major argument or engage in detachment and withdrawal as coping mechanisms for the forthcoming separation (McNulty, 2005; Pincus et al., 2001; Pincus & Nam, 1999). Thus, overall servicemembers are subjected to a number of physical and psychological boundary tests during the predeployment phase that are potentially traumatic. This corresponds with evidence that individuals experience a decrease in cognitive functioning and an increase in emotional disturbance in response to this phase (Jha et al., 2010; Jha et al. 2015; Jha et al. 2016; Jha et al. 2017; Maguen et al., 2008; Pincus et al., 2001; Stanley et al. 2011), including the most elevated levels of anxiety relative to the other deployment cycle periods (Bolton, Litz, Britt, Adler, & Roemer, 2001; MacDonald, Chamberlain, Long, Pereira-Laird, & Mirfin, 1998).

The deployment phase of combat experience is the phase more commonly associated with traumatic experiences, given the amount and intensity of war that combatants are exposed to. As detailed in the Combat Experiences Scale/Combat Experiences Scale-Revised (CES/CES-R) scales (see Bryan & Cukrowicz, 2011; Hoge et al., 2004), these experiences can include operating in areas with IEDs/mines, knowing someone injured or killed in combat, seeing destroyed homes and villages, directing fire at the enemy, being directly responsible for the death of an enemy combatant or non-combatant, and many other experiences in which an individual naturally activates their bodily response to threat. Unsurprisingly, when the CES/CES-R specification of combat is assessed with U.S. personnel from OEF/OIF, every single experience had occurred anxiety, suggesting that while the potential for death anxiety remains, individual levels may be unknown.
for at least one of the individuals sampled—in fact, experiences like receiving incoming rocket/mortar fire, knowing someone seriously injured or killed, and working in an area with IEDs consistently affected up to 66-90% of servicemembers (Hoge et al., 2004). More than 34,000 individuals were medically evacuated from OEF or OIF for battle and non-battle injuries (Cohen et al., 2010; Gawande, 2004; Harman, Hooper, & Gackstetter, 2005). Roughly 90% survived once aid was administered (Friedman, 2004), meaning that a notably large number of veterans with amputations and disfigurement emerged from these specific wars when compared to past conflicts (Tyson, 2007). Thus, it is no surprise that of the veterans exposed to high levels of combat, a significantly high proportion screened positive for typical trauma-related mental health diagnoses after deployment, as summarized in detail in Section I (Hoge et al., 2004; Killgore et al., 2008; Verdelli et al., 2011).

Finally, the reunion and postdeployment phases of the combat cycle have a number of associated stressors as the servicemember prepares to reintegrate and adjust to both family life and, in some cases, civilian life, including anxiety over reestablishing personal relationships and translating technical skills to the civilian workforce (Lincoln, Swift, & Shorteno- Fraser, 2008; Pincus et al., 2001; Segal & Segal, 2003). Meanwhile, for servicemembers returning to spouses that developed relative autonomy while they were deployed, research suggests that they may struggle to accept changes in how the household is run or what their role in it should be (Drummet, Coleman, & Cable, 2003; Faber, Willerton, Clymer, MacDermid, & Weiss, 2008; Pincus et al., 2001). Children of
servicemembers may experience confusion, crying, or resentment upon their return that leaves the servicemember emotionally hurt or missing the peers and/or common purposes of deployment (Amen, Jellen, Merves, & Lee, 1988; Doyle & Peterson, 2005; Drummet et al., 2003). Those with injuries may face painful physical therapy and complicated health-seeking processes at the VA (Bilmes, 2007).

There is also a possible and unique social stressor for active duty and veteran servicemembers in the social civil-military gap, as detailed by several authors (Mastroianni & Scott, 2011; Samet, 2011; Sherman, 2015). Specifically, Samet (2011) argues that the ‘street theater’ of citizens thanking members of the military for their service represents a public absolution of responsibility for war, and thus creates deep sense of resentment and isolation among servicemembers (Richtel, 2015). Though perhaps well-intentioned, a former Green Beret suggested such performances of gratitude from civilians who did not suffer the experiences of war may be a core objection among servicemembers, in that this ‘thank you for your service phenomenon’ co-opts servicemembers’ experiences and increases their sense of exclusion from the rest of society (Richtel, 2015). One Army veteran noted that at a panel for post-9/11 veterans, when asked who felt uncomfortable being thanked for their service, “almost every hand went up” (Marvin, 2013, n.p.).

In addition to all of these distinct military-related stressors across the deployment phases, it bears noting that servicemembers in the AVF era are statistically less likely to enter service with ‘blank slate’ nervous systems in the first place. Recalling the discussion in Section I regarding the role of ACEs in reliably dysregulating the
autonomic nervous system—such that individuals may be more susceptible to stress-related disorders in adulthood (Neigh et al., 2009)—U.S. military personnel in the AVF era are more likely to have experienced ACEs than civilians in this same period (Blosnich et al., 2014). Specifically, men with service in this era show a higher prevalence of experiencing all 11 ACE categories than men without service, while women also show higher prevalence in several ACE categories than civilian women. As important, while 27% of males with military service had an ACE score equal to 0 (compared to 42% of non-serving males), another 27% of males with military service had an ACE score of 4 or more (compared to 13% of non-serving males)—indicating not just more ACE experiencing, but more additive negative effects of ACE experiencing (Blosnich et al., 2014). Such findings suggest a distinct ‘pre-deployment’ phase that may exist, in which individuals may be enlisting in military service as a means of escaping violent, abusive, or dysfunctional home environments (Iversen et al., 2007; Kelly, Skelton, Patel, & Bradley, 2011; Schultz, Bell, Naugle, & Polusny, 2006; Trent, Stander, Thomsen, & Merrill, 2007; Woodruff, Kelty, & Segal, 2006), all stressful experiences likely to have had long-lasting effects on affected servicemembers’ nervous systems. Such a ‘pre-deployment phase’ can increase vulnerability for physical and mental symptoms after the deployment cycle (Cabrera, Hoge, et al. 2007; Fritch et al. 2010; Sareen et al. 2013).

Clearly, each of the phases of the deployment cycle holds a number of experiences that have the potential to be dysregulating. As a consequence, we can proceed to build a theory of combat-related deregulation with confidence that combat is
an experience inherently filled with exposure to stressors/traumatic events, and that there is a high likelihood any servicemember who participates in it will be subjected to at least one or more of those events.

**Likelihood of Inhibited Activation Discharge**

As explained in Section I, activation discharge is the process through which the body releases the activation present as a consequence of its polyvagal threat response—that is to say, a process through which the body re-regulates the nervous system after a traumatic experience. A natural re-regulatory process designed to return the body to its homeostatic baseline, the motor discharge of activation that takes place during the discharge process can often include twitching, trembling, and shaking (Levine, 1997; Scaer, 2005). This process does not operate according to plan when the human ‘thinking brain’ takes over during the threat response and prioritizes cortical functioning over the dorsal vagal nerve response—i.e., over the parasympathetic ‘freeze’ process and its subsequent discharge. At such a point the activation discharge process is subverted, the individual appears to return to ‘normal’ functioning, and the activation is not resolved. The result of this inhibition of natural processes, as Scaer (2005) notes, is that “the physiological events that occur in the brain and endocrine and autonomic nervous systems associated in response to trauma and freeze will occur repeatedly” (p. 213).\(^{51}\)

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\(^{51}\) Note that the responses that follow inhibited activation discharge—the physiological events noted above—are not events *uniquely* attributed to this override (i.e., it is of course possible to exhibit physiological responses that are not necessarily an indication of activation discharge following a thinking brain override).
Acculturation is often to blame, as it is the threats and/or expectations imposed by the thinking brain—i.e., institutionally and socially constructed pressures that are perceived by an individual—that motivate such subversion.

I argue that combat service in the U.S. military inherently involves two specific forms of acculturation that make it particularly likely to undertake inhibited activation discharge and, as a consequence, cause dysregulation of the ANS: the social hierarchy and the command hierarchy.

The social hierarchy in combat is a fundamentally powerful form of military structure. Just as servicemembers are assigned a specific set of regulations to the conduct of combat, the social structure of the military informally assigns a number of expectations to its members—chief among which can be the maintenance of masculinity. From the moment a servicemember enters basic training to the moment they are downrange in a combat zone, masculinity is often emphasized via “skills and techniques deemed necessary” for survival in combat: strength, health, and resiliency (Arkin & Dobrofsky, 1978, p. 159; see also Britt, 2000). Indeed, suppressing emotions as part of this masculine reinforcement can be extremely adaptive in extreme stress scenarios, potentially increasing the team’s effectiveness and likelihood of survival (Bonanno, 2004). As such, being a part of a combat unit means being tough and courageous while avoiding “display[s] of weakness in general, [or] reticence about emotional or idealistic matter,” such that though the recruit initially “behaved in this way to avoid the ridicule of his peers, ultimately, he internalized the ideal himself” (Stouffer, Suchman, DeVinney, Star, & Williams, 1949; pp. 131-142). Such attributes are
antithetical to the role of the victim; any evidence of weakness or vulnerability violates the social norms and labels a servicemember an outsider and a threat to the social structure (Murdoch, Polusny, Hodges, & O’Brien, 2004; Rosen, Kaminski, Parmley, Knudson, & Fancher, 2003). Thus, managing any distress through ‘suck it up’ and ‘power through’ techniques is a cultural expectation reinforced by these security institutions (Braswell & Kushner, 2012; Bryan et al., 2012; Evans, 1993; Green et al., 2010; Pogrebin & Poole, 1995; Stanley, in press; Stanley & Larsen, 2017; Violanti, Marshall, & Howe, 1985).

I argue that, by virtue of this social hierarchy of norms, it is reasonable to expect servicemembers will also inhibit activation discharge in favor of accessing the cortical functioning necessary to maintain an image of strength and resiliency. The most obvious example of the power of the social hierarchy is the proclivity—or lack thereof—of servicemembers to explicitly seek mental health services. Two fears underlie such stigmatization: the fear that seeking such services will deem a servicemember ‘unfit’ for duty and thereby hurt their career, and the fear that other individuals will actively distance themselves from the seeking servicemember (Britt, 2000). The socially constructed (not institutionally guaranteed) threat of being turned away from the servicemember’s primary group is sufficiently high that they may actively hide evidence of post-traumatic activation. The evidence confirms this hypothesis: beyond anecdotal evidence confirming the existence of the social stigma (Britt, 2000), surveys of servicemembers show that less than half of those with mental health challenges intend to ever seek assistance, that an even smaller number actually do, and that they
consistently report fears of stigmatization and alienation attached to seeking mental health guidance (Britt, 2000; Greene-Shortridge, Britt, & Castro, 2007; Hoge et al., 2004; Tanielian & Jaycox, 2008). Thus, this theory proceeds under the expectation that when a servicemember acculturates to the social hierarchy and experiences trauma, they may inhibit the necessary discharge processes and thereby succumb to ANS dysregulation.

At the same time, the command hierarchy exerts its own power. Such a structure assigns each soldier, airman, sailor, and Marine specific responsibilities. It is embedded into the training of every servicemember in two varieties: (1) based on the expectations of members of the armed services as a whole by the Joint Chiefs of Staff (JCS), and (2) based on the expectations of a servicemember’s specific branch, unit, and military occupational specialty (MOS) within that unit. The threat of punishment either at the unit-level by a servicemember’s supervising officer or at the higher-level through the broader military judicial system ensures that the command hierarchy weighs heavily on the mind of the servicemember and, in doing so, acculturates them into the responsibility hierarchy. Thus, when the servicemember is exposed to any of the traumatic experiences inherent in combat and their body attempts to resolve the ensuing activation, I argue that it is reasonable to expect that they may subvert the activation discharge process in favor of accessing the cortical functions necessary to follow the responsibilities of the hierarchy.

A central example of the influence of the command hierarchy is Rules of Engagement (ROE), the institutionally mandated conditions, degree, and manner under which a servicemember may justifiably select targets, weapons, scales of force, and
other engagement-related activities (Smith, 2008; U.S. Army, 2000). The ROE are a highly ingrained element of the combat command hierarchy, as servicemembers receive extensive training in ROE both in-classroom and in field exercises and are issued an appropriate ‘ROE card’ to assist them during day-to-day operations (Inspector General of the Department of Defense, 2008). The explicit goal of the ROE is to “preclude the indiscriminate use of deadly force while simultaneously allowing soldiers sufficient latitude to defend themselves” — a balance that is understandably hard to achieve given the suddenness and uniqueness of most combat scenarios (Department of Defense, 1992; n.p.). It is this tension that may lead to inhibited activation discharge. The weight of taking action outside of the ROE is so great that servicemembers may actively subvert natural processes to obey their parameters — when a soldier is consistently and repeatedly trained to abide by the ROE, their “normal outlet of responding to provocation and threat is hindered by the mission’s rules of engagement” (Adler, Huffman, Bliese, & Castro, 2005, p. 122; see also Litz, Orsillo, Friedman, Ehlich, & Batres, 1997). This creates the feeling of helplessness that is the hallmark of ANS dysregulation. Evidence indicates that the acculturation to the command hierarchy is exhibited in the field: for example, 38% of a sample of soldiers from OIF reported being in a threatening situation where they were “unable to respond because of rules of engagement” (Killgore et al., 2008, p. 1114). Thus, I expect that when a servicemember acculturates to the command hierarchy and experiences trauma, they may be predisposed to inhibit the necessary discharge processes and thereby succumb to ANS dysregulation.
Likelihood of Chronic Stress Accumulation

Similar to inhibited activation discharge, the chronic accumulation of stress activation represents one of the conditions that can generate ANS dysregulation. As Section I specified, the social engagement system (SES) is the initial polyvagal ‘braking mechanism’ designed for the initial evaluation of threats. When this ventral vagal nerve-mediated system is subjected to chronic threat exposure and is unable to safely negotiate said threats, over time the system “habitually shuts down” (Ogden et al., 2006, p. 33). Put simply, as the body adapts to a constant barrage of incoming stress it deems the SES ineffective and, as a consequence of a maladaptive process undertaken with adaptive intentions, the individual can lose their ability to distinguish normal/neutral environmental cues from threatening ones. The sympathetic nervous system and dorsal vagal responses become easily activated and the individual can enter a cycle of ANS dysregulation.

I argue that two defining features of combat service in the U.S. military prompt the repeated experiencing of danger without the ability to negotiate safety and thus, may dysregulate the autonomic nervous system: repeated tours of duty and the uncertainty of irregular warfare.

The structure of tours of duty within the U.S. military may play a key role in promoting the chronic accumulation of activation. Two specific features of tours of duty contribute to this role: the length of tours and the frequency of tours. As a consequence of both the evolution of national security demands and the introduction of the AVF

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structure, in the past few decades the U.S. military has consistently had “no easily accessible pool to drawn on to expand their ranks” (Tanielian & Jaycox, 2008, p. 22). This challenge was drawn especially starkly as the U.S. entered the first extended conflicts since the advent of the AVF via OEF and OIF. Given that it was “arguably… not sized, resourced, or configured” to meet the demands of these conflicts, it continued a long-standing tradition of revising existing recruitment, attrition, and deployment policies in order to increase supply (Tanielian & Jaycox, 2008, p. 23; see also Knowles et al., 2002; Moskos, 1981). This led branches of service to increase the operational tempo (OPTEMPO), extending both the length and frequency of tours such that one year of deployment to a combat theater would be matched with two years outside of combat for all active-duty forces (Office of the Under Secretary of Defense, 2007). However, evidence suggested that the OPTEMPO was often more intense than the official policy stated: the rate of time spent with boots-on-the-ground in theater to the time spent at home stations quickly approached 1:1 (Bonds, Baiocchi, & McDonald, 2010; Castro & Adler, 2005), and for a number of servicemembers the ratio became less than 1:1, indicating that they were spending more time in-theater than out of it (Philpott, 2009).

When they were home, servicemembers were training more frequently, and when they were in-theater, their deployments were often extended — to the longest lengths since World War II (Congressional Budget Office, 2005; Sheppard, Malatras, & Israel, 2010). Though argued to be temporary shifts to meet the demands of the wars,

52 Though typical 15-day Rest and Recuperation (R&R) leave passes did remain in effect for these periods for those serving 365-day deployments (eligible for use after the
these changes nevertheless meant that within twenty years, the rate at which
servicemembers deploy increased more than five-fold (Adler et al., 2005; Castro &
Adler, 1999). As a consequence of such a marked increase in both the length and
frequency of tours, it is reasonable to expect a subsequent increase in the deployment
phases highlighted earlier in Section II, and therefore the number of traumatic
experiences a servicemember endures and the repetitive rate at which they endure
them. Data confirms that as deployment length increases, personnel often report
increased depression, post-traumatic stress scores, and overall poorer well-being (Adler
et al., 2005; Buckman et al., 2011; Litz et al., 1997; McCarroll et al., 2010). Further,
contradicting any argument that deployments get less stressful as the servicemember
becomes accustomed to the stressors, a number of studies examining veterans across the
Vietnam, Gulf I, and OIF/OEF wars demonstrated that prior combat deployment
experience was associated with poorer adjustment to the next deployment (Adler et al.,
2005). Finally, it bears noting that members of the U.S. military currently serve for some
of the longest periods of time recorded in the AVF era—specifically, an average of more
than ten years for officers and more than six years for enlisted personnel (Pew Research
Center, 2011b). Given all of these factors, I expect that when a servicemember is

servicemember had completed 270 days in-country), the increased OPTEMPO even
produced new 4-day R&R passes in which members would stay with their unit but on a
theoretical ‘leave.’ A number of servicemembers noted that the safety and logistical
processes involved in transporting individuals on R&R passes were complex enough
that the time was more efficient when used on-base, though importantly, this meant
that anyone using the hypothetical ‘leave’ remained subjected to many of the intense
experiences and stressors involved in the deployment phase (Burke, 2012).
subjected to increased frequency and length of deployments and overall military service, and therefore the associated stressors (i.e., not just a chronic exposure to the trauma of deployment but also to the multiple other stressors of the deployment cycle), they may gradually negate the ability of the SES to identify and negotiate threats and may succumb to ANS dysregulation.

In addition to repeated tours of duty, the irregular nature of warfare has dominated international crises for the AVF period. Written about extensively throughout literature on asymmetric warfare, counterinsurgency, hybrid wars, guerrilla wars, and fourth generation wars, irregular warfare is defined as a non-conventional collection of techniques, tactics, and procedures utilized by combatants that promote protraction and ambiguity of conflict (Litz et al., 2009; Polusny et al., 2011). The irregular war-fighter seeks to maintain cover in areas like dense urban terrain, where they can maintain access to public services, communication, infrastructure, and local populations, and in doing so negate the overwhelming technology and firepower of the U.S. military (Eldridge, 2013; Hoffman, 2007; Kilcullen, 2007). Now “more common than ever,” the non-linear operations that such fighters employ replace the traditional line advances of earlier wars with a hide-and-seek model that aims to disrupt, evade, and ultimately erode opposing forces (U.S. Army, 2008, n.p.; Edwards, 2004). As such, irregular wars often involve ‘pulsing’ threats, whereby enemy combatants rapidly
converge on U.S. forces from multiple axes, attack, disperse, and repeat (Edwards, 2004).53

The hidden threats of this type of warfare can leave U.S. personnel feeling constantly unprepared and entrapped, thereby potentially degrading the ability of the SES to discern threats over time and amplifying overall stress accumulation. One particular element of irregular warfare that exemplifies its dispersed threats and the effects on servicemembers is the use of mines and improvised explosive devices (IEDs). Often “sophisticated weapons triggered by cell phones, infrared signals, or pressure plates,” IEDs allow both their users and their location to remain hidden while causing powerful devastation to U.S. forces when detonated (Tanielian & Jaycox, 2008, p. 26). They can singularly detonate or operate as part of a coordinated ambush, in which combatants detonate an IED and follow on with pulsing personnel attacks (Wilson, 2006). In addition to ground-based IEDs, IED-laden vehicles are often used to achieve similar ends (Eldridge, 2013). The data confirms a strong presence of these irregular forms of warfare in modern war: up to 90% of OIF and OEF veterans surveyed reported being attacked or ambushed, while 52% participated in IED clearing operations and more than 66% worked in areas with IEDs (Capone, McGrath, Reddy, & Shea, 2013; Castro, Hoge, & Cox, 2006; Kavanagh, 2005). Some estimates attributed over 40% of combat casualties from these wars to IED attacks (Brookings Institution, 2007; Tanielian

53 As Army Commander Stephen Twitty said about operations in Iraq in 2003, “They were coming at us like bees. We would kill one lot and then more would appear. It was the most amazing thing” (Edwards, 2004, pp. 283-284).
Thus, irregular warfare is expected to provide ample opportunities for feelings of helplessness and the ensuing chronic stress accumulation.

**Unlikelihood of Re-Regulation**

Given the convincing arguments that qualities inherent in combat lead to ANS dysregulation via inhibited activation discharge and/or chronic accumulation of stress activation, it is necessary to consider any opportunities for re-regulation that may exist and resolve such dysregulation prior to any substantive effects—after all, if additional experiences attributed directly to combat service provide re-regulatory capacity, then our question of dysregulation’s later effects would be negated.

The survey of stress response systems in Section I highlighted the elements of dysregulation theory that suggest it is particularly difficult to resolve. During dysregulation the inherently adaptive neuroplasticity of the brain actually begins to accept dysregulation as the norm—i.e., the neural ‘circuitry’ associated with that dysregulation is actually strengthened over time, and individuals can become physiologically doomed to repeat their dysregulatory cycles (Ogden et al., 2006, p. 87; see also Czeisler et al., 1976; Stanley, 2010, in press; Scaer 2005; van der Kolk 2006). A number of studies confirmed this durability, demonstrating the long-standing prevalence of ANS symptoms across several cohorts of subjects (Kluznik et al., 1986; Southwick et al., 1993; Thygesen et al., 1970). However, Section I also offered a number of re-regulatory practices that naturally titrate the dysregulation over time and can
return the system to some semblance of homeostatic operating, including sleep, physical exercise, and programmatic interventions.

Structural necessities accompanying OPTEMPO mean that often servicemembers are required to work long shifts, and during continuous operations they may not have the opportunity to sleep at all (Dolan, Adler, Thomas, & Castro, 2005). One study of Army Ranger training designed to capture the real-world effects of a continuous operation scenario found that soldiers slept on average 3.2 hours per night (Pleban, Valentine, Penetar, Redmond, & Belenky, 1990). Other studies measuring sleep duration during common operations found levels between 5.6 and 6.5 hours per night (Luxton et al., 2011; Mysliwiec et al., 2013; Troxel et al., 2015). Even though such sleep duration for deployed members is consistently lower than for both predeployment and postdeployment servicemembers, perhaps the more interesting statistics are relative to sleep quality. Due to the hazardous conditions, inconsistent operational hours, exposure to noises, and crowded sleeping quarters, roughly 75% of deployed servicemembers report their quality of sleep to be significantly worse abroad than at home (Peterson, Goodie, Satterfield, & Brim, 2008; Seelig et al., 2010). In addition, given that a number of dysregulatory symptoms can play their own influential role in disrupting sleep patterns, it is expected that sleep does not hold significant re-regulation potential among military cohorts.

On the other hand, servicemembers seem like prime examples for the use of physical exercise as a natural re-regulatory process. However, while physical training prior to deployment is a professional requirement and often involves extensive
workouts, in-theater physical exertion is markedly different in character. The highly regimentsed facility-utilizing aerobic exercise regimens of predeployment—a key form of exercise for re-regulation—evolve to become highly variable and task-oriented regimens while in-theater (Sharp et al., 2008). As individuals carry packs, prepare camps, and undertake patrols, they use different physical capacities than they did while training for much different periods of time. As such, some evidence shows an overall decrease in aerobic capacity and body composition, with inconsistent shifts in upper body strength and lean mass (Lester et al., 2010; Sharp et al., 2008). Even for those who may experience significant aerobic experience, the level of maximum potential likely reached by individuals in the predeployment stages means that a ‘ceiling effect’ may occur—the high aerobic activity necessary to effectively release the activation of the threat response may not be able to be achieved among a group already in prime physical condition (Dolan et al., 2005; McArdle, Katch, & Katch, 1996; Sharp et al., 2008). Thus, the physical fitness of U.S. servicemembers may suggest that they either cannot improve upon their aerobic capacity or actively lose some of it, casting reasonable doubt on the influence of exercise as a re-regulating practice among the military cohort.54

54 Of course, some may argue that aforementioned leave like R&R passes may serve as a temporary break from the sleep deprivation and physical exertion such that individuals will reasonably return to homeostatic baseline. However, significant evidence suggests that such leave periods may also be characterized by high-risk behaviors and alcohol/substance abuse (see Ames & Cunradi 2004; Jacobson et al. 2008), suggesting that they may instead continue to perpetuate the cycle of dysregulation.
In addition to sleep and exercise, a number of programmatic interventions have been specifically introduced by the DoD (and affiliates) in military populations. In recent years, various comprehensive reviews have tried to capture the breadth of depth of these programs, summarizing them based on unique elements like their goal (e.g., prevention, resolution, resilience-building), target deployment phase, target audience, sources of funding, and more (Institute of Medicine, 2014; Meredith et al., 2011; Weinick et al., 2011). One of the largest assessments of the many programs found approximately 226 total DoD programs specifically addressing psychological health and TBI (Institute of Medicine, 2014), based on an online database built by the RAND Corporation. Some programs focus on prevention in active duty contexts; for instance, a small number of the MMFT interventions considered in Section I have been administered in trials to predeployment Army and Marine Corps cohorts (Stanley et al., 2011). However, with only a handful of military-sponsored implementations, the overall likelihood that an average servicemember experienced such interventions, and is thus able to successfully prevent some dysregulation, is low.

A much larger number of symptomatic treatment options have been implemented, such as the Battlemind program (an early post-combat intervention debriefing that shows some evidence of reduced posttraumatic stress symptoms) (Adler, Castro, & McGurk, 2009). Yet, the lack of substantial, long-term evidence regarding the effectiveness of such programs means that they currently offer little to no reasonable expectation of re-regulation among participations. Indeed, the Army’s most touted treatment mechanism—the Comprehensive Soldier and Family Fitness (CSF2)
program—has been criticized for universal adoption without pilot testing to determine program effectiveness (Eidelson, Pilisuk, & Soldz, 2011; Eidelson & Soldz, 2012; Institute of Medicine, 2014) and then subsequent lack of peer-reviewed empirical evidence of its effectiveness (Denning, Meisnere, & Warner, 2014; Institute of Medicine, 2014; Smith, 2013; Steenkamp, Nash, & Litz, 2013). Likewise, a recent evaluation of the Marine Corps’ Operational Stress Control and Readiness (OSCAR) program found that the program increased awareness and peer social support, but that there was also no demonstrable impact on the use of specialized mental health services or—most importantly—improvement in mental health outcomes (Vaughan, Farmer, Breslau, & Burnette, 2015).

There are two other non-intervention in-theater options for potential easing of symptoms, the first being the chaplain system. Codified in the U.S. military since 1775, the U.S. Chaplaincy designates one chaplain per deployed battalion to conduct religious rites/practices and offer support and counseling services (Besterman-Dahan, Gibbons, Barnett, & Hickling, 2012). As a frontline of care for dysregulated servicemembers that can relate directly to their combat experiences while offering confidential counseling services, the potential for chaplains to advertently or inadvertently guide the release of some dysregulatory activation is theoretically high. However, in practice, it is reasonable to assume this potential may not be realized. Though all are trained in basic suicide prevention and stress management practices, clinical counseling experience among chaplains remains highly variable (Besterman-Dahan, Gibbons, et al., 2012). Furthermore, the common combat relationship that may lead dysregulated
servicemembers to more comfortably seek out chaplains for regulatory assistance necessarily means that chaplains may experience high levels of secondary traumatization and dysregulation themselves. They too are living in combat zones and susceptible to many of the intense experiences inherent in that setting (Besterman-Dahan, Barnett, et al., 2012; Zimmerman, 2000). Furthermore, the oft-cited concept of compassion fatigue in which clinicians interacting with post-traumatic stress syndrome clients develop empathetic stress reactions has been shown to be particularly prevalent among clinicians working with human-induced trauma (Courtois, 1993; McCann & Pearlman, 1990; van der Kolk et al., 1996), including specifically military chaplains (Figley, 1978; Hayes, 2009; Tyson, 2007). Based on the lessons of neural resonance (see van der Kolk 2015) and crossover stress contagion (see Bolger et al. 1989), this likelihood for chaplains’ dysregulation may even exacerbate the dysregulation experienced by those who seek their advice. Thus, due to the potential trauma exposure, secondary traumatization, and compassion fatigue, the presence and/or utilization of chaplaincy services may not reasonably be expected to play a role in re-regulation.

Unit cohesion is the second force posited to mitigate the dysregulatory effects of combat trauma exposure. Scholars argue that embedded ‘battle buddy’ and ‘wingman’ social networks utilized during operations and the processes like the watch system (in which individuals are responsible for the protection of their unit during sleep periods) imbue senses of support, acceptance, motivation, and confidence into a unit community and ultimately mitigate current (or prevent future) symptoms of dysregulation (Armistead-Jehle, Johnston, Wade, & Ecklund, 2011; Bliese, 2006; Griffith, 2002; Griffith.
& Vaitkus, 1999). This long-standing theory only finds mixed empirical support, however (Meredith et al., 2011). While a number of authors found that measures of unit cohesion do correlate with higher levels of well-being and lower levels of anxiety and avoidance (Brailey, Vasterling, Proctor, Constans, & Friedman, 2007; Britt, Dickinson, Moore, Castro, & Adler, 2007; Iversen et al., 2008; McTeague, McNally, & Litz, 2004; Steiner & Neumann, 1978), other authors found a disturbing correlation between unit cohesion and increased levels of PTSD symptoms (Fontana, Rosenheck, & Horvath, 1997; Suvak, Vogt, Savarese, King, & King, 2002). Some noted that this evidence could be proof of declining rates of cohesion following developments like the DEROS (date expected to return from overseas) system that allowed for individuals to return home at differing intervals within their unit, or the improvement of communication technologies allowing for greater contact with home and less emotional investment in the specific unit (Fontana et al., 1997). However, most agreed that instead such results reflected Milgram and Hobfoll (1986)’s theory that the relationship between unit cohesion and dysregulatory effects is curvilinear: as stress intensifies from low to medium levels it activates confidence, support, and motivation among unit members, but as it intensifies beyond moderate levels and becomes overwhelming it can betray that earlier functionality and cause confusion, panic, disillusionment, and a sense of guilt or loss among unit members (Fontana et al., 1997; Hobfoll, 1985)—and potentially generate
broader crossover stress contagion (Bolger et al. 1989). This would allow for the positive effects of unit cohesion measured in some studies while also cautioning against defining unit cohesion as a guaranteed mitigation or buffer of dysregulatory symptoms. Thus, because both the role (mitigating current or preventing later dysregulation symptoms) and the effect (increasing support and confidence or increasing sense of guilt and loss) of unit cohesion are unclear, it is reasonable to proceed under the assumption that it may not provide significant opportunities for re-regulating the symptoms of ANS dysregulation.

Overall, based on evidence that processes for re-regulating ANS dysregulation like sleep, exercise, and human-based interventions are not likely to be significant in combat, I proceed with the development of my hypothesis that combat may reliably dysregulate the autonomic nervous system.

**Linkage I: Summary**

Based on the likelihood that servicemembers are exposed to intense experiences related to combat (either in the predeployment, deployment, or postdeployment phases) and the influence of acculturation and the nature of modern warfare in proliferating opportunities for inhibited activation discharge and chronic stress accumulation, it is reasonable for us to predict that widespread ANS dysregulation may

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55 Interestingly, some evidence suggests that unit leaders may play a determinative role in how responsive unit cohesion is to increased levels of stress arousal beyond the curvilinear relationship predicted here (see Catignani 2004).
exist among U.S. combat veterans. Therefore, the first part of the causal process involved in connecting traumatic combat experiences to changes in foreign policy processes generates the following general hypothesis:

**H1:** If a veteran was exposed to combat, then they may be likely to experience dysregulation of their autonomic nervous system.
SECTION II

PART 2

How ANS Dysregulation May Predict Foreign Policy Preferences

Having established a theory that combat service may motivate ANS dysregulation in servicemembers, my next goal is to extend our understanding of the states associated with dysregulation to some of the actual behaviors they direct. As Ogden and colleagues (2006) emphasize, knowing how the brain changes in and of itself is losing sight of the forest for the trees—to develop a wholly comprehensive understanding of ANS dysregulation relative to military service, it is necessary to understand the decisions and behavior that changes in the nervous system actually produce. I use the policy decision-making realm—specifically, foreign and defense policy—to better understand such behavioral responses, and in doing so help answer: how might military service shape our policymakers?

In the section that continues, I argue that dysregulation may be likely to functionally narrow servicemembers’ individual windows of tolerance such that, per the lessons of the dual systems theory of decision-making, System 1 decision-making begins to reliably dominate System 2 decision-making. Specifically, I argue that increased System 1 dominance leads to unconscious and powerful attempts to down-regulate one’s dysregulation symptomatology, such that individuals actively undertake experiential avoidance to neutralize elements that might push them beyond their window of tolerance. Finally, I provide a series of arguments in favor of the content and
context of foreign policy/defense decisions providing environments likely to push individuals toward the edges of their window of tolerance, such that it is reasonable to expect individuals to undertake significant experiential avoidance—and in doing so, prefer aversive, neutral, non-aggressive foreign policy preferences.56

**Dysregulation and Dual Systems Decision-making**

As explained in Section I, decision-making can be generally attributed to a dual systems theory in which System 1 affectively sorts information and System 2 cognitively reinterprets such information to make an overall decision. Authors continually add and subtract nuance to this overall body of literature, but in general, these overarching principles of System 1 being responsible for initial survival brain assessments and System 2 being responsible for thinking brain assessments are widely accepted across hundreds of publications (See Section I Part 3; Stanovich & West, 2000). Yet, this overarching theory of decision-making necessarily presumes some consistency and generality across individuals; as such, it overlooks some of the broad-based changes

56 As noted later in this section, there are a number of related theories that could be built and tested based on the lessons surveyed in Section I—including how service-related dysregulation affects discrete elements of decision-making such as myopia, cognitive complexity, and delayed gratification; or how it predicts specific foreign policy choice outcomes like going to war or signing a free trade agreement. Just as Part 1 of the theory intentionally selected combat service as one clear theoretical lens through which to evaluate service-related dysregulation, Part 2 selects dysregulation’s effect on willingness to engage with policy issues as one clear window into dysregulation’s effects on policymaking. Future research should engage with the multiple alternatives for assessing dysregulation’s effects on policymaking.
that may exist across an important subset population of servicemembers experiencing the unique—and per the previous argument, broad-based—effects of dysregulation.

I argue that when dysregulation functionally narrows a servicemember’s window of tolerance, it increasingly amplifies System 1 decision-making and reliably disables System 2 decision-making, such that we can expect dysregulated servicemembers may deviate from dual systems decision-making and operate according to a weighted System 1 process of decision-making.57

Recall from Section I’s consideration of the stress response how experiencing dysregulation can disrupt the synaptic operations of neurotransmitters, in turn affecting several key affective structures throughout the brain. Areas like the hypothalamus, a key mediating structure between cortical and limbic communication, show long-term failures of integration such that bottom-up information dominates top-down information (Ogden et al., 2006). The posited integrative function of the anterior cingulate cortex shows similar variability. Evidence suggests the integrative connectivity between the insular cortex and prefrontal cortices is similarly disrupted in cases similar to dysregulation (Lim, Choi, Pomara, Wolkin, & Rotrosen, 2002; Lyoo et

57 Importantly, this argument can apply to any individual taken beyond their window of tolerance in one-off games (e.g., unique singular situations of stress/trauma) (see Renshon et al., 2017; Stanley, 2018). However, this dissertation is unique in its assertion not just that the dual systems theory of decision-making fails in times of severe stress or trauma, but also that it fails consistently and habitually for individuals who are dysregulated (under the premise that times of ‘stress’ for a dysregulated individual make up a perpetual state, even in seemingly innocuous environments).
al., 2004), while the amygdala shows an irregular hyperresponsivity (Bremner, 2002; Hull, 2002; Lanius et al., 2006).

Though simple changes in blood flow and volume of these neurobiological structures alone may not obviously demonstrate that System 1 is amplified, changes in the processes that these structures control do. Indeed, as the body redirects resources to allow for threat assessments to be made more efficiently — i.e., as it narrows the window of tolerance — it is explicitly seeking to increase the accessibility of natural assessments. As Kahneman (2003) notes, “the ‘hot’ states of high emotional and motivational arousal greatly increase the accessibility of thoughts that relate to… the current needs” (p. 1454; see also Elster, 1998; Loewenstein, 1996). In other words, “whenever the limbic system decides that something is a question of life or death, the pathways between the frontal lobes and the limbic system become extremely tenuous” (van der Kolk, 2015, p. 64; MacLean, 1990). The survival brain takes over the responsibility of driving the information search at this stage; it is actively directing resources to the structures that can help it in information absorption, assessment, and selection (Stanley, 2018, in press) — and it is doing so at a faster pace. As van der Kolk (2015) explains, this brain’s “cellular organization and biochemistry are simpler than those of… our rational brain, and it assesses incoming information in a more global way. As a result, it jumps to conclusions based on rough similarities, in contrast with the rational brain, which is organized to sort through a complex set of options” (p. 57).

At the same time that the survival brain is actively amplifying System 1 processes while extending beyond the window of tolerance, it necessarily redirects
resources away from the thinking brain—such that the top-down control of System 2 decision-making erodes. Evidence suggests the hippocampus may degrade over time during ANS dysregulation (Bremner et al., 1999; Geuze et al., 2004; Teicher et al., 2006), in addition to evidence indicating that key pieces of the prefrontal cortex—"the center for insight, understanding, and planning for the future" (Ogden et al., 2006, p. xxii)—fail to activate in response to trauma (Shin et al., 2004; Woodward et al., 2003). As mentioned above, the dynamic interaction between the prefrontal cortex and emotional-structural inputs like the insular cortex also degrades.

These disruptions and degradations of the neuroanatomical inputs to the thinking brain mean that as an individual’s window of tolerance narrows, and they extend beyond it faster and more often, their ability to collect information, interpret relevant internal and external cues, identify goals, assess possible options and their utility, plan and execute a decision, and situate that decision within a broader historical narrative is compromised. When taken outside the window of tolerance, “the degree of integration [among modules of information processing] has shifted downward,” such that the lower levels dominate over the higher levels of thinking and “instead of harmony we have moved toward either chaos or rigidity” (Siegel, 2012, p. 148). Kahneman (2003) echoes this point in his description of Klein (1998), noting that decision-makers habitually taken beyond their window of tolerance “rarely need to choose between options because, in most cases, only a single option comes to mind” (p.
1454). In other words, “highly accessible features will influence decisions, while features of low accessibility will largely be ignored…” (Kahneman, 2003, p. 1459).

Importantly, evidence from studies of individual decision-making in the kinds of high-stress, high-demand scenarios that take individuals beyond their windows of tolerance confirm this hypothesis in which emotional arousal amplifies System 1 preferences. Recently, Renshon et al. (2017) found evidence that measured higher physiological and emotional arousal correlated with “non-equilibrium responses,” wherein individuals select non-optimal outcomes in bargaining scenarios (p. S200). Additional evidence showed that among a separate set of individuals with established narrowed windows of tolerance, those subjected to gambling tasks showed hypersensitivity to immediate reward—a myopic decision-making process whereby they preferred choices that yield high immediate gains even in spite of higher future losses (Bechara, Dolan, & Hindes, 2002). Another sample of individuals with narrowed

\[58\) It is important to note that per this argument, not only does dysregulation hinder the accessibility of executive functioning characteristic of System 2; in doing so, it also fundamentally hinders some of the proposed re-regulatory interventions that are offered for dysregulated populations (including the military). Interventions that rely on cognitive reappraisal (such as positive psychology, surveyed earlier in this dissertation) have fewer cognitive resources to draw upon in dysregulated populations, such that their techniques may offer little to no impact on existing symptoms. This may explain why programs like CSF2 have struggled to demonstrate clear success.

\[59\) In some of the studies cited, investigators used individuals with substance dependence issues as a model of individuals with narrowed windows of tolerance, as they may reflect the same neuroanatomical degradations in structure and function as dysregulated individuals.
windows of tolerance showed increased magnitude of limbic responsiveness\(^{60}\), coupled
with a decrease in top-down control of behavior (Yoo et al., 2007).

Indeed, similarly powerful evidence suggests individuals who are beyond their
window of tolerance experience an active decline of System 2 decision-making. In
samples of individuals exposed to acute stress—including civilian firefighters
conducting live-fire drills (Baumann, Gohm, & Bonner, 2011); internal medicine
residents (Gohar et al., 2009); police and correctional officers (Swenson, Waseleski, &
Hartl, 2008; Vila, Morrison, & Kenney, 2002); and military personnel subjected to field
training exercises (Kavanagh, 2005; Lieberman et al., 2005; Lieberman, Tharion, Shukitt-
Hale, Speckman, & Tulley, 2002), survival training (Morgan, Doran, Steffian, Hazlett, &
Southwick, 2006; Morgan et al., 2004; Morgan et al., 2001), and predeployment stress
inoculation training (Jha et al., 2015; Jha et al., 2016; Jha et al., 2010)—participants
showed several traits of overall cognitive degradation, including problem-
solving/attention deficits, inaccuracies in visual pattern recognition, and significant
declines in working memory (see Stanley & Larsen, 2017). As Lieberman et al. (2005)
powerfully articulate,

The extent and magnitude of the decrements in cognitive performance and mood
we observed confirm the anecdotal observations that have been made in combat.

Observations by police, firefighters, disaster victims, and other in high-stress

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\(^{60}\) In the study cited here, investigators used individuals in a sleep deprived state to
model individuals with narrow windows of tolerance (Yoo, Gujar, Hu, Jolesz, &
Walker, 2007).
environments also suggest that severe cognitive deficits are common under such conditions...even well-trained leaders exhibit significant degradation in cognitive performance and mood when exposed to severe, multifactorial stress (p. 428).

In sum, there is reason to believe that when an individual extends beyond their window of tolerance, the effects of ANS dysregulation reliably amplify System 1 decision-making and degrade System 2 decision-making such that they develop a decision-making pattern heavily weighted toward System 1 preferences.61

**H2A:** *If an individual exhibits ANS dysregulation, then their survival brain preferences may be likely to amplify and their thinking brain preferences may be likely to degrade.*

Importantly, what specific decisions emerge from being in a System 1-weighted decision-making process depends, to a perhaps significant extent, on the individual. As noted throughout Section I’s consideration of dysregulation, individual experiences of dysregulation can vary according to two generalized poles (hyper- and hypo-arousal), such that individuals experiencing one common source of dysregulation may exhibit fundamentally different preferences ranging from intrusive hyperactivity to reclusive dissociation. This ‘chaos or rigidity’ as suggested by Siegel (1999) might initially appear to pair nicely with political preference hypotheses, wherein hawkish preferences might be attributable to hyper-arousal and dovish preferences to hypo-arousal.

61 Note that the term ‘preferences’ as used here refers to the goals and priorities of the thinking and survival brains.
Yet, though there is evidence that more than two-thirds of individuals exhibiting dysregulatory responses showed hyper-aroused vs. hypo-aroused symptoms (Lanius et al., 2002), this evidence comes from an extremely small sample of individuals—and thus does not convincingly suggest that we confidently know the behavior and interaction between hyper- and hypo-arousal in the population. Indeed, as noted in Section I, the multiple ways in which individual nervous systems may develop—across the securely attached, insecure-anxiously attached, insecure-avoidantly attached, and disorganized attached individuals—makes any simplification or generalization prohibitively difficult at this juncture. Furthermore, recall Corrigan et al. (2010)’s note that the variation in experiencing hyper- and hypo-arousal even within one type of system wiring may be a product of ‘biphasic rollercoastering,’ wherein individuals are instinctively trying to correct the discomfort that comes from one form of dysregulation such that they inevitably overcorrect into the other form of dysregulation (indeed, as previously noted, the authors suggest that most individuals are experiencing hyper- and hypo-arousal near-simultaneously even as symptoms manifest in one form or the other). As such, it would appear that we are predicting servicemembers beyond their window of tolerance experience decreased capacity for deliberative, thinking-brain control of decisions, but that there is no specific alternative to offer and test as a predictive theory for their survival brain’s behavior; their preferences could vary wildly from hawkish to dovish, from interventionist to isolationist. In other words, the theory offered above debunking the cadent functioning of dual systems decision-making in a large population of dysregulated servicemembers is a necessary contribution to this research program on the
effects of military service on decision-making; however, it is not sufficient for offering any specific predictive insight, given that its two central outcomes—hyper- and hypo-arousal—cannot effectively be predicted, and therefore tested, at this time.

Over time, greater specification of the relationship between and among hyper- and hypo-arousal prevalence and overall symptomatology will undoubtedly yield a number of specific hypotheses that can be tested relative to individuals’ political preferences when beyond their window of tolerance. However, even now there is at least one important commonality shared between the two poles of dysregulation that may offer a more specific understanding of the effects of military service on decision-making. As the window of tolerance narrows and the survival brain’s discomfort of moving beyond that window becomes more frequently and more quickly accessed, individuals may be likely to adopt patterns of behavior that can be conceptualized as ‘experiential avoidance’ (Briere, Hodges, & Godbout, 2010; Chapman, Gratz, & Brown, 2006), wherein the body is still actively attempting to either down-regulate (in the case of hyper-arousal) or up-regulate (in the case of hypo-arousal) the extremely aversive level of dysregulatory activation being experienced (Frewen & Lanius, 2006). As van der Kolk (2015) explains, the intense activation and life-long coping with that activation in dysregulated individuals can lead individuals to “shut down the brain areas that transmit… visceral feelings and emotions… in an effort to shut off terrifying sensations,

62 Note that ‘avoidance’ as used here is not perfectly equivalent to the approach/avoidance poles ascribed to autonomic arousal (e.g., to hyper- and hypo-arousal). Instead, this is avoidance prior to exiting the window of tolerance.
[individuals] deadened their capacity” to receive any self-sensing signals (pp. 93-94; see also Hartl, Rosen, Drescher, Lee, & Gusman, 2005). As kindling increases, so too does the innate desire and tendency to avoid it.

Indeed, this kind of activation-aversion is evidenced to some degree in the substantial literature on maladaptive coping behaviors including substance abuse (Sher & Grekin, 2007; Sher & Stanley, 2008); risk-seeking behaviors (Andover & Gibb, 2010; Auerbach, Abela, & Ho, 2007; Woodman, Cazenave, & Le Scanff, 2008); non-suicidal self-injury (Andover & Gibb, 2010; Jacobson & Gould, 2007; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006), and suicide (Bryan & Rudd, 2012; Bryan, Rudd, et al., 2013). These attempts to avoid leaving the window of tolerance “can represent an attempt to cope with triggered or sustained posttraumatic emotional states, perhaps especially when these states overwhelm internal affect regulation capacities and thereby motivate the need for avoidance” (Briere et al., 2010, p. 767; see also Briere, 2002; van der Kolk, McFarlane, & Van Der Hart, 1996). As a clear example of this phenomenon, a study of 72 active-duty Army soldiers revealed that in every one of 136 suicide attempts under investigation the soldiers reported attempting suicide to reduce or escape from their aversive internal physiological conditions—to “stop bad feelings” (Bryan, Rudd, et al., 2013, p. 149; see also Stanley & Larsen, in press). In other words, paradoxically, though the body initiates the activation of ANS dysregulation as a form of protection, it also tries to actively escape, resolve, or avoid that activation (Briere, Kaltman, & Green, 2008; Cloitre et al., 2009).
Thus, when an individual is exiting the window of tolerance and approaching either frenetic symptoms of hyper-arousal or disassociated symptoms of hypo-arousal, experiential avoidance means they demonstrate diminished interest in those symptoms, a sense of detachment/limited range of sensation for those specific symptoms, and a general likelihood that they actively change/avoid environments that are likely to result in those symptoms (van ‘t Riet & Ruiter, 2013). Indeed, because avoidance “constitutes the control of attention away from threatening stimuli” — unconsciously and automatically executed (van ‘t Riet & Ruiter, 2013, p. S111; see also Blumberg, 2000; Mendolia, 1999) — an individual that exhibited amplified System 1 tendencies and degraded System 2 tendencies may be particularly primed to undertake experiential avoidance.

Experiential avoidance is regarded as the most prevalent response to activation (van ‘t Riet & Ruiter, 2013) across the general population of trauma-exposed individuals. Yet, most importantly, military servicemembers are demonstrated to be even more uniquely suited to exhibiting this particular response to a narrowed window of tolerance. Not only do samples of numerous veterans confirm this close connection between experiential avoidance and veteran status (Benotsch et al., 2000; Monson, Price, 63 Note that avoidance here is different than suppression as previously defined — whereas suppression was the culturally-endorsed override of ANS dysregulation in situations eliciting symptoms because it might risk exclusion from the in-group, avoidance is the dysregulated individual’s innate tendency to avoid other situations that may elicit the dysregulatory responses. That said, experiential avoidance and ‘strategic emotion suppression’ are occasionally used interchangeably in the trauma literature (Litz et al., 1997).
Rodriguez, Ripley, & Warner, 2004); in addition, recall that members of the military demonstrate increased rates of insecure-avoidant attachment when compared to civilian controls (Renaud, 2008; Solomon, Dekel, & Mikulincer, 2008). This suggests that servicemembers may be more likely to demonstrate the hallmarks of avoidance as their dominant coping style—avoiding disclosures of personal information, being self-reliant, and avoiding intimacy in the interest of devaluing the experience of distress (Mikulincer, Shaver, & Pereg, 2003). In other words, in this sense, the rate of ACE/trauma exposure in the AVF-era may suggest that a significant cohort of servicemembers could be uniquely predisposed to fervently try to avoid and or down-regulate the experience of distress.⁶⁴,⁶⁵

**Dysregulation, Dual Systems, and Foreign Policy Preferences**

Thus, an initial survival-brain decision-making tendency common to both hyper- and hypo-arousal emerges: when experiencing a significantly narrowed window of tolerance, military servicemembers experiencing a System 1 weighted decision-making

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⁶⁴ For this argument, the corruption of implicit memory and the individuals’ default programming style matter significantly; to be clear, those without insecure avoidant attachment styles may pursue strategies designed to complete unsuccessful defense, rather than avoiding the repeated kindling of activation. Though this dissertation focuses on the dominant avoidant tendencies, future research might consider how insecure-anxious/ambivalent and disorganized attachment patterns might inform responses to policy decision-making and at what magnitude.

⁶⁵ It also bears noting that many of the DoD/VA-endorsed re-regulation programs considered earlier in the section (e.g., CBT and CSF2) may inadvertently encourage top-down control to avoid arousal. In this way, the institution may create continued conditions for experiential avoidance to perpetuate.
process may undertake aversive actions designed to relieve, escape, and/or control the activation of ANS dysregulation, such that they actively avoid the feelings, reminders, and experiences that might motivate extension beyond their window.

I argue that one environment particularly likely to issue such ‘triggers’ are foreign policy and defense policy decisions, for two reasons: the content and the context of such decisions.

Foreign policy and defense topics will often include specific content that is relevant to a servicemember’s prior service and deployment experiences, such that they may provide the simple informational inputs necessary to trigger flashbacks or reminders that may attempt to draw individuals beyond their windows of tolerance. As shown in Section I’s exploration of the mechanisms of ANS dysregulation, re-experiencing and re-enacting the responses to prior trauma can often be motivated by exposure to similar cues/stressors; in its habitual effort to protect individuals, the body misperceives such ‘distressing reminders’ as indication of imminent danger, and in doing so can force individuals beyond their window of tolerance and into dysregulation symptomatology. Such reminder-stressors can be external or internal (Layne et al., 2006). One common form of reminder is internal cues, which can be cognitions, images, and content-based cues (Layne et al., 2006; Pitman, 1989). For instance, Vietnam veterans reported greater distress after reading news articles about the first Gulf War (Chiaramonte, 1992; Davis, 1991), while the dedication of a war memorial elicited similar dysregulatory responses (Faltus, Sirota, Parsons, Daamen, & Schare, 1986). Additional evidence from non-war related dysregulation shows that these ‘reminder-
reactivation’ effects can hold for mere conversations about traumatic experiences (Layne et al., 2006). As such, issues of foreign and defense policy—whether they deal with specific countries that dysregulated servicemembers were stationed in, specific actors they interacted with, or specific topics or issues they worked on—may simply be contextually likely to motivate flashbacks and, as such, uniquely motivate the extension beyond a servicemember’s window of tolerance.

At the same time, particularly for individuals making foreign policy decisions as part of the ‘political elite’ (Gelpi & Feaver, 2002), the high stakes contexts of such decisions may play a significant role in reliably driving individuals beyond their windows of tolerance such that those likely to employ experiential avoidance undertake it. After all, in addition to internal cues serving as distressing reminders that can provoke dysregulation, external cues—sensory environmental experiences, such as fireworks approximating firefight sounds and motivating ANS activation—can do the same (Layne et al., 2006). In this sense, the physiological sensory reactions associated with high-stress foreign or defense policy decision-making may capably push individuals beyond their window of tolerance. Foreign policy decision-making is notoriously characterized by threats to an overall nation’s relationship with the external environment, in addition to “shortness in the perceived time available for decision” (Hermann, 1979, p. 27), generating an internal sense of threat, pressure, and anticipation. Furthermore, individuals might recognize that their role is under threat if their response to the policy crisis fails—indicating a personal ‘threat’ of audience costs. This constellation of weighty consequences and shortened time horizons—in addition
to the frequent surprise nature of acts in the foreign and defense policy realm—might thus generate the kind of acute stress reminiscent of dysregulation, such that individuals could extend beyond their windows of tolerance (Stanley, 2018). As a result, “the quality of the performance of policymakers in crises” might be directly attributable to the individual policymaker’s response to the stress (Hermann, 1979, p. 27; see also Stanley, 2018).

Thus, though the potential predictions between hyper/hypo-arousal and interventionist/isolationist policy preferences may sound appealing, they also may overlook a key step in the dysregulation-to-policy-preferences linkage: the moment in which individuals take steps to actively avoid or escape increased arousal, and therefore absolve themselves of dysregulated decision-making in the first place. Given the reasonable expectation that foreign policy decision-making provides such an environment, I therefore predict that combat-dysregulated servicemembers may amplify their System 1 avoidance and degrade their System 2 decision-making such that they will be likely to prefer neutral, controlled, neither cooperative nor aggressive foreign policies.

Based on the likelihood that dysregulated servicemembers have narrowed windows of tolerance that lead them to access System 1 (and disable System 2) decision-making more frequently than those with wider windows of tolerance, the likelihood that weighted System 1 survival brain processes favor experiential avoidance, and the likelihood that foreign policy issues hold the content and context likely to motivate experiential avoidance, it is therefore reasonable for us to predict that dysregulated
servicemembers may prefer neutral, non-valenced, non-aggressive (either in the direction of cooperation or aggression) foreign policies. Therefore, the second part of the causal process involved in connecting military-related stress/trauma to changes in foreign policy processes generates the following general hypothesis:

**H2B:** When presented with foreign policy choices, combat-dysregulated servicemembers may be likely to prefer neutral options to either interventionist or isolationist policy choices.

The full series of hypotheses is reflected in Figure 6, while the operation of the hypotheses in the context of an individuals’ window of tolerance is reflected in Figure 7.

![Diagram](image.png)

**FIGURE 6. Theory of Combat-Related Dysregulation and Policy Preferences: Hypotheses**
FIGURE 7. Window of Tolerance and Policy Preferences.
SECTION II
Alternative Explanations

As evidenced in the literature review’s comprehensive assessment of the dearth of strong theories connecting military service with political decision-making outcomes, finding clear and/or falsifiable theories in the realm of intra-brain choice is particularly difficult. Yet, it is also particularly essential, in order for any definitive research agenda on stress and military decision-making to continue. Though the preceding theory developed in Section I relies on well-validated arguments and evidence to offer a convincing plausibility probe (as detailed later in Section III), and as such is more concerned with initiating this research paradigm by first illustrating the theory’s own viability rather than directly comparing it to comprehensive alternatives, there is a primary alternative explanation that can be noted and incorporated into our broader investigation of the relationship between military service, trauma, and decision-making.

The primary challenge to any theory predicting preferences is a theory of self-selection and/or pre-existing preferences. A specific variant of this, social identity theory, argues that individuals exhibit in-group favoritism regardless of most conditions (Tajfel, 1981; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). At its broadest level, the individual is born into a structured society and derives their identity from the social categories they exist within (Abrams & Hogg, 1990). In this context the individual’s foreign policy preferences would be defined by one or several identities
that they have access to (including but not limited to their parents’ preferences, socioeconomic status, racial identity, etc.) (Klar, 2013). The identities either stay consistent over time or “when disturbances change the situation… [the individuals] act to counteract the disturbance” (Stets & Burke, 2000, p. 233).

In this way, social identity theory would predict that any neutrality or aversion exhibited in the foreign policy preferences of combat veterans is a stable product of a unique social identity they hold—whether that identity is rooted in membership in the U.S. military, racial identity, socioeconomic identity, geographic identity, family preferences, or more. For this explanation to be accepted, observable outcomes in foreign policy preferences would require evidence that veterans held a social identity that predicted their foreign policy preferences prior to deployment that is different from the social identity that predicted those preferences after deployment (e.g. a woman who identifies as a Southerner embodies the self-assessed foreign policy preferences of that group before deployment, and returns from deployment identifying as a soldier and embodying the different foreign policy preferences of that group).

Another possible alternative, if related, explanation for foreign policy preferences in servicemembers is a social learning hypothesis. Under this explanation, the learning and internalization of new information based on interaction results in the redefinition of interests for a state (Haas, 1990). Translated to the individual level, “the acquisition of some new skill, ability, or knowledge” during military experiences is added to a servicemember’s preference frame and is thus able to be called upon when choosing a foreign policy preference (Hermann, 1990, p. 10). The acquisition may allow the veteran
to have more information at their disposal or it may restructure previously inaccurate information. Importantly, this social learning hypothesis is often invoked in much of the trust literature on servicemembers in the political elite—the idea being that veterans have a familiarity with military operations and DoD processes that necessarily makes them better foreign policy decision-makers over time; they hold unique preferences “based on their experiences while serving in the armed forces” (Lupton, 2017, p. 2; see also Dempsey, 2010; Feaver & Kohn, 2001; Golby et al., 2017). For this hypothesis to be proven correct, servicemembers with common formative military experiences (such as combat) would have to consistently prefer similar foreign policy outcomes, and again do so distinctly from their pre-service preferences. For this hypothesis to be proven incorrect, servicemembers with common formative military experiences (such as combat) would have to have different foreign policy preferences.
SECTION II

Summary

In the highly-integrated and complicated theory specified in Section II, I laid out the argument that servicemembers in the AVF era may be likely to experience ANS dysregulation, and that as such, they may be likely to prefer measured/controlled foreign policy preferences.

Specifically, I first argued that military service in the AVF era is reliably full of powerful stressors. Of course military service, when it involves combat, is likely to subject individuals to multitudinous and powerful traumas—from life-threatening gunfights, to seeing friends and civilians wounded or killed, to suffering severe injuries to one’s self, servicemembers are undoubtedly subject to important kinds of traumatic experiences in downrange environments. That said, as shown throughout the Section, many of the military’s stressors come from situations before and after combat, such that combat itself is not the only element—indeed, not even a necessary element—in making military service inherently stressful. The physical and psychological challenges of basic training and assimilation to the military lifestyle; the stress inoculation and weighty anticipatory stressors of predeployment; and the dramatic personal and professional life changes that follow returns from deployment and separation from service make for a military life course full of potentially stressor-filled scenarios. Furthermore, the powerful argument that the AVF era is characterized by individuals with prior life stressor exposure (as documented in the significant rates of ACEs as potential
motivators for enlistment) (Blosnich et al., 2014) means that military service may be uniquely characterized by trauma before it even begins.

Second, I offered a detailed explanation of how unique elements of military service can turn such multi-dimensional stressors into a powerful dysregulation of the ANS. Specifically, I argued that the social and command hierarchies of military service are likely to engender inhibition of individuals’ activation discharge, and that increased length/repetition of service intervals and the style of fourth-generation warfare are likely to engender chronic stress accumulation. Importantly, I also noted the lack of re-regulatory opportunities, such that the dysregulation generated by these powerful features of military service can be reasonably expected to be deeply-embedded and long-lasting.

Next, I introduced the theoretical argument that dysregulated servicemembers may be likely to favor System 1 decision-making processes and be unable to access System 2 decision-making processes, such that they prefer decidedly neutral, aversive decisions. In light of the convincing literature specifying a generalized dual-process theory of decision-making for individuals within their windows of tolerance, I offer a contradictory theory of decision-making for individuals extending beyond their windows of tolerance. Specifically, due to the accompanying neuroanatomical shifts of dysregulation (which functionally narrow individuals’ windows over time) and the nature of those shifts (which emphasize ‘natural assessments’ or affective preferences geared toward survival), I argued that dysregulated individuals may reliably extend beyond their windows such that they are consistently making System 1-guided
assessments (and are having a harder time accessing System 2-guided assessments). Those assessments often lead to hyper/hypo-arousal; however, as shown, they first can often motivate an experience of experiential avoidance—a concerted effort by System 1 to avoid the distress of activation, and a hallmark coping strategy shown in military populations.

Finally, I offered a summary of the ways in which complex foreign policy and defense policy decisions set the stage for taking decision-makers beyond their windows of tolerance, such that dysregulated servicemembers making choices in these environments can be expected to first exhibit avoidance and favor neutral, aversive System 1 foreign policy preferences. In general, foreign policy decisions provide many of the kinds of stressors likely to ‘trigger’ individuals to move beyond their windows of tolerance, both in content (e.g., historical reminders of past dysregulating experiences) and context (e.g., shortened time horizons, collaborative nature). Such stressors can potentially push individuals toward the edges of their own windows of tolerance, such that their weighted System 1 decision-making is likely to take over and enact avoidance.

In sum, the revolutionary argument I present here is a product of many sub-arguments, drawn from across the literature on military service, the human stress response, and foreign policy decision-making. It leverages what we currently know about trauma to explain a possible internal and long-lasting impact of military service. It then leverages what we currently know about decision-making in the context of that trauma to explain how foreign policy decisions, in particular, may be revelatory environments for learning how military-specific dysregulation impacts decision-making.
making. In doing so, it introduces one of the first truly cohesive narratives connecting the effects of military service to political decision-making.
SECTION III

METHODOLOGY

Having considered the most recent lessons about the impact of military service, particularly in the AVF era; about how the mind, brain, and body process threat and stress; and about how individuals make decisions particularly in international affairs contexts, this dissertation used Section II to introduce the first comprehensive theory linking these highly interrelated— but often under-linked— fields. Specifically, I introduced a complex series of proposed linkages in which: (1) servicemembers in the AVF era may be likely to experience dysregulation of their ANS; (2) that dysregulation may be likely to reorganize dual systems decision-making processes such that individuals will favor System 1 (survival brain) preferences and have more difficulty accessing System 2 (thinking brain) assessments, in turn leading them to fervently attempt to escape/avoid such activation; and (3) the activation-inducing qualities of foreign policy decision-making scenarios may mean dysregulated servicemembers will be more likely to exhibit this pattern in those environments. In other words, my hypothesis specifically proposes that servicemembers in the AVF era may reliably be expected to have highly controlled and restrained foreign policy preferences, due to the intricate causal mechanisms provided by ANS dysregulation.

As it charts its way through a number of neuroscientific arguments, this theory simultaneously stakes its hypotheses on well-founded evidence and untested theoretical claims. It builds itself upon some soft ideas in hard science. It uses the most cutting-
edge evidence available, in a field that consistently acknowledges we are only at the very *beginning* of our understanding of how and why the brain works as it does. Yet this lack of concretion and openness to how theories are applied and understood, while a hallmark of much of the trauma and neuroscience literature, invites a great deal of criticism in political science (and international relations in particular). Indeed, the skeptical critiques of the role of the individual in international affairs considered in Section I are one small fraction of the literature’s concern with the type of theory advanced here. The academy has largely come to pursue concreteness over fuzziness; as Levy (2008) defines it, “theoretically and methodologically self-conscious empirical work” has grown to be the standard within the political science discipline (p. 7). This push is done in the pursuit of objectively good social science, and is in no way limited to political science, but the outcome is the same regardless of intention or field: the academy prizes replicability and quantitative analysis more than ever before, and potentially more than alternative methods (see Freese & Peterson, 2017, for a review).

At the same time, the methods required to even assess the *limited* amount of knowledge we have on the complex interactions of trauma, stress, and decision-making in the brain are rare in use and prohibitively costly to access. As van der Kolk (2015) notes, the ultimate irony is that the commonly used “gigantic multi-million dollar machines based on advanced physics and computer technology rapidly made neuroscience into one of the most popular areas for research” (p. 39). The ability to visualize the brain’s activation in response to researcher-induced prompts became the proverbially hottest, but also most difficult, ticket to score.
More recently, the issue of exclusivity of fMRI and PET technologies as a barrier to implementation in this research gave way to the issue of accuracy, as evidence emerged suggesting that the most common software utilized to conduct fMRI analyses yield false-positive rates of up to 70% (Eklund, Nichols, & Knutsson, 2016; Lieberman & Cunningham, 2009), inciting a flurry of debate both within and outside of traditional neuroscience research circles as to how much trust is placed in new advanced technologies. In this way, the chief argument within much of recent social science (that the academy needs greater and more precise replicability) ran into the chief argument of those utilizing cutting edge technologies (that replicability was near impossible at this point anyways, due to fundamental differences in how the technologies have been used over time).

In sum, this dissertation introduces a theory built upon back-breaking amounts of scholarly effort across at least three separate disciplines, but draws upon—and draws its own—conclusions that are admittedly evolving. Furthermore, it does so in a field in which traditional data collection methods are prohibitively difficult to enact in time, resources, and reliability. This raises the important methodological question of: is there an appropriate way forward, when a theory is still progressively evolving in its development, and the data collection as part of that development is prohibitively difficult to access?

Fortunately, plausibility probes as a methodological tool were developed with the explicit intent of sharpening theories and/or testing those theories before undertaking extensively costly research efforts—and are accepted within mainstream
political science for such advantages (Eckstein, 1975; George & Bennett, 2005; Levy, 2008). Such probes often involve either applying a theory-driven investigation to a particular case (or, equivalently, investigating the details of a singular case as a means of illuminating a theory), in order to “give the reader a ‘feel’ for a theoretical argument by providing a concrete example of its application, or to demonstrate the empirical relevance of a theoretical proposition by identifying at least one relevant case” (Eckstein, 1975, p. 100; see also Levy, 2008). Importantly, this makes plausibility probes an “intermediary stage” between hypothesis construction and large-scale empirical testing (Levy, 2008, p. 7).

For these specific reasons, this dissertation undertakes a plausibility probe design. It simultaneously and adamantly stands behind the elaborate theory developed and advanced in Section II as well as the enormous value and implications of this research, while acknowledging that due to the continual fluidity and emergence of some of its foundational neuroscientific lessons and the massive undertaking that will be empirically measuring (and validating) decision-making processes in the brain, an ‘intermediary stage’ is called for. In other words, the literature surveyed throughout

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66 Of course, in some sense, a dissertation is supposed to be a costly research effort; however, this dissertation confidently places the anticipated costs of an in-depth lab study of veterans’ mental activity in response to foreign policy prompts (inclusive of recruitment costs, lab rentals, and upwards of $30,000 to obtain scans on even a small set of participants) as a prime example of the ‘expensive wild-good chase’ that Eckstein warned about in advocating for alternative means of theory-testing (Eckstein, 1975, p. 110).
Section I demonstrated a wide and deep gap, and this dissertation seeks to take the first step, of many, required to fill such a chasm.

**Building a Plausibility Probe Design**

In the testing of any major theory in political science, there are multiple methodologies available for use, largely congregating around two commonly-known poles of quantitative and qualitative research. Classically quantitative methods focus directly on outcomes-based evaluation, using an inherently deductive logic to set a broad-based theory that can be distilled into individual propositions to be tested. Correlational research evaluating the relationships between variables, when combined with varying tools like probability sampling, surveys, and experimental research designs, yield confirmatory results in favor of or negating the original hypotheses (Teddlie & Tashakkori, 2009). Qualitative research, in contrast, provides a number of distinct methodologies that each seek to understand human action as it occurs (Schwandt, 2001), relying upon non-numerical data to contextually assess phenomena under their naturally occurring conditions, rather than via predetermined hypotheses (Carter & Little, 2007). A similarly diverse set of tools and practices—used across case study research (Bennett & Elman, 2006, 2007; George & Bennett, 2005; Levy, 2008; Mahoney & Goertz, 2006; Stake, 1994; Yin, 2002); grounded theory approaches (Charmaz, 2006; Clarke, 2005; Glaser & Strauss, 1967); narrative/biographical approaches (Beverley, 2000); ethnographies (Hammersley & Atkinson, 1995; McCall, 2000); and participatory action traditions (Kemmis & McTaggart, 2000), to name a few—
provide more inductive lessons, such that broader-based theories can be developed and tested.

In recent years, ‘mixed methods’ have emerged as methodological attempts to blend the lessons of quantitative and qualitative research, in which researchers “go back and forth seamlessly between statistical and thematic analysis” (Teddlie & Tashakkori, 2009, p. 8). This is not to say that such methods necessarily use statistical and thematic tools throughout the entire research design, nor to suggest that there is even one standardized format of using mixed methods; rather, the hallmark of such methods is the availability of traditionally quantitative and qualitative tools at each defined stage of the research design, and the researcher’s intentional planning and selection of whichever methodology’s tools are most appropriate for obtaining information at each of those defined stages.

In choosing to pursue a plausibility probe methodology for this uniquely-suited theory, the traditional format would be an in-depth case study from the qualitative tradition. Its goal would be to serve as an illustrative example of how a particular veteran’s military-related dysregulation shaped, or did not shape, their decision-making relative to a particular foreign policy choice or preference, such that accumulated evidence about how dysregulation manifests in servicemembers and affects their decision-making could be added to the existing theory. Indeed, such a case study (and multiple versions thereof) is proposed in later considerations of future research. However, such case studies in this context run directly into several key problems. For instance, such case studies typically rely on vast amounts of primary
sources for data collection—e.g., interviews, reviews of correspondences—in order to obtain the information necessary to build any hypotheses. Yet, a key tenet of the theory itself is that the survival brain’s aversion to re-activation or arousal motivates increased suppression and/or avoidance—suggesting that the exact population the theory purports to test is unlikely to openly share some essential information needed to develop and test the theory, by virtue of the theory’s own argument. In other words, whether in a direct interview or in publicly accessible documents, a case study of a veteran (particularly in the political elite) would likely demonstrate that they avoid discussing existing dysregulation or engaging in discussions of past trauma and its future decision-making effects. In contrast, the anonymity of non-identifiable broad-based samples may eliminate some or all of the social and physiological barriers to accessing and reporting such information, such that larger samples yield more information than individualized interviews. This logic is confirmed in numerous public health studies of stigmatized health outcomes showing that collecting information through something like anonymized computer interviewing yields more information than face-to-face interviewing—in addition to the ethical consideration that face-to-face interviewing yields more psychological distress than computer interviewing (Newman et al., 2002).

At the same time, individual plausibility probe case studies would fail to address the central critique of much of international relations research: the non parsimony of theories of individuals. Not only does the theory presented in Section II essentially claim that individuals would be unwilling to share the necessary information in an in-
depth case study context; it also claims that while individual servicemembers may exhibit widely variable manifestations of dysregulation, that a broad-based effect of aversive arousal on their foreign policy decision-making should emerge. The test of the theory, in this sense, is less about typifying what dysregulation looks like in one unit of analysis and more about predicting the trend across multiple units of analysis. As such, an in-depth case study as a plausibility probe may provide less convincing and less informative evidence for the overall research question.

Fortunately, as Eckstein (1992) notes, “plausibility probes can also be directly empirical,” as a means of conducting “preliminary… but suggestive tests” before more rigorous tests can ultimately be conducted (p. 149). He goes on to note that “such empirical probes are especially important where nonempirical probes yield very uncertain results,” arguing in favor of past plausibility probes which were “sufficiently rooted in data and reasoning to warrant their statement in more precise form and their thorough testing, preferably by logically deduced predictions about findings in a project specifically designed not to get interesting data but to get those crucial to establishing the validity of the work’s central propositions” (Eckstein, 1992, p. 149). Levy (2008) echoes this sentiment, noting the unique value in the combination of traditional qualitative methods associated with plausibility probes and statistical analyses. Thus, building on this expanded empirical interpretation of plausibility probes, this dissertation utilizes a plausibility probe design built of both quantitative and qualitative methods.
The plausibility probe employs these mixed methods across three independent analyses: a small-scale original pilot survey, a large-scale random sample survey, and a cross-sectional time-series analysis. The use of multiple analytical designs is designed to fulfill the goal of the plausibility probe the best—all, to illuminate the complex relationships (whether confirmatory or contradictory of the hypotheses) that exist across military service, ANS dysregulation, and policy preferences in samples of various scope and makeup. Exercising the theory on three wholly independent samples, using different non-random/random sampling as well as various tools within three mixed methods designs, guarantees a robust look into the theory’s working mechanisms. Put differently, if various mixed methods approaches can best illuminate a test of a theory’s plausibility, then employing multiple analytical designs using those various methods “increases the leverage of the research” (Blatter & Haverland, 2012, p. 205). At the same time, undertaking three individual analyses thus buffers against both the perceived and real weaknesses of plausibility probes in the social sciences; while such probes can loosely be used to “lower the standards of evidence and inference and allow for easy tests on most-likely cases” (George & Bennett, 2005, p. 75), using three distinct designs actually widens and diversifies the application of the theory. It upholds the high bar set for theoretical evaluation—in addition to yielding interesting information about the theory’s practical mechanisms.

Each design’s sampling procedures, data collection methods, and data analysis methods are described in the subsequent sections, in addition to brief summaries of
why each form of empirical assessment is necessary and valuable in testing the validity of the theory advanced in this dissertation.
As a means of assessing the intricate relationships between traumatic military service experiences, ANS dysregulation, and policy preferences, a small-scale original pilot survey was developed and deployed. This survey made use of a mixed methods monostrand design, wherein the design only sought to establish one line of theoretical inquiry across the conceptualization, methodological, analytical, and inferential stages, but did so with both qualitative and quantitative components available at each stage. Specifically, it used a conversion mixed design, wherein qualitative data is ‘quantitized’ and the data subsequently interpreted using quantitative and/or qualitative interpretations (Teddlie & Tashakkori, 2009).

**Sampling Procedures**

The goal of the Study 1’s small-scale original survey sampling methods was to produce a collection of individuals with military service in the AVF era who were able to identify their combat service experiences; identify their current psychological, physiological, emotional, behavioral, and spiritual states; and identify their attitudes and preferences on a variety of hypothetical foreign policy issues. In collecting such a sample, the survey would provide insight into the foreign policy attitudes of a target population of military officers with combat experience in the AVF era.
This sample was collected according to purposive/non-random sampling procedures. Though the high level of external validity that random sampling confers is widely known and regarded (and consider later in this Section), purposive samples are generally accepted as distinctly appropriate methods for a narrow set of circumstances, including: (1) pilot studies designed to determine how many resources should be devoted to a research program; (2) intensive or critical case studies developing a theory or measurement design; (3) studies of hard-to-find populations; and (4) studies of human behavior (Bernard, 2012). Interestingly, the phenomenon this dissertation attempts to measure has, to some degree, qualities of all four categories.

First, as noted in the introductory discussion, there is a necessary ‘piloting’ within a plausibility probe to determine the feasibility of a broader and more costly research undertaking—such that it is almost expected that a pilot survey, and thus a purposive sample, would be employed here. After all, in large-scale random sampling surveys military populations often demonstrate low survey response rates (Miller & Aharoni, 2015) for any number of reasons including skepticism over the survey’s impact (Newell, Whittam, Uriell, & Kang, 2010), a lack of sponsorship/endorsement by the military leadership (Jones et al., 2007), and/or practical reasons like internet access during deployment (Newell et al., 2010). Furthermore, the ubiquity of surveys used across the military means respondents can potentially demonstrate the deteriorated reliability and validity of studies with ‘professional’ (i.e. habitual) survey takers (Hillygus, Jackson, & Young, 2014). Thus, these factors confirm that a pilot survey evaluating the sampling procedures and survey mechanisms is particularly appropriate
for this unique population—especially for assessing the time, effort, and cost that might be required to procure a larger sample (Campbell, 1955; Karmel & Jain, 1987; Seidler, 1974; Snedecor, 1939; Topp, Barker, & Degenhardt, 2004).

Second, though this survey involves a much smaller application of the rigorous qualitative tools that would typically underlie an intensive or critical case study, it conducts its plausibility probe with the explicit intent of further illuminating and/or developing the theory as presented. In other words, this research study actively seeks to illuminate some of the diversity in the population at hand instead of solely seeking statistical generalizability, making purposive sampling a particularly appropriate and useful tool (Barbour, 2001; Ritchie, Lewis, & Elam, 2003).

Third, the military populations considered in this study represent, to a certain degree, the ‘hard-to-find’ populations that purposive sampling can more effectively locate and collect data from. Traditionally, individuals are labeled as such populations because they may not want to be openly designated as part of a community and/or do not welcome researchers investigating the phenomena at hand. Though this comparison does not apply to the general military (wherein things like visual insignia and a highly managed Defense Manpower Data Center managing all service records ensure most members are highly visible and, at least internally, accessible), the core the theme of a hard-to-find population resonates. The mental health stigma considered in Section II showed clearly how servicemembers generally fear open identification of mental health challenges for fear of their peers or the institution turning them away (Britt, 2000; Greene-Shortridge et al., 2007; Hoge et al., 2004; Tanielian & Jaycox, 2008)—such that a
random sample of participants might yield responses that do not reveal any information, versus the targeted information that might come from a purposive sample recruited because they have some reason to trust the researcher and share their experiences. Put simply, a targeted purposive sample could locate those more willing to share their experiences and knowledge than a random member of the community—conferring a higher degree of internal validity in the process (Bernard, 2002; Karmel & Jain, 1987; Tremblay, 1957). Fourth and finally, many of the complex relationships between military service, dysregulation, and policy preferences require in-depth questions assessing behavior, versus the generally attribute-guided parsimonious questions of random sampling. In short, purposive sampling yields a number of direct benefits in specific scenarios, each of which clearly apply to this particular research question.

Of course, there are a number of drawbacks associated with purposive sampling, largely rooted in its inherent levels of bias. Purposive samples are often small, based on roughly 30 to 60 units of analysis (Bernard, 2012), suggesting it is quite difficult to ensure that both general cases and outliers have been collected to sufficiently mirror a general population (Barbour, 2001) or to obtain a high enough level of power to sufficiently control against type II errors. In this particular study, the population is limited to all servicemembers with prior combat experience in the AVF era—a group estimated to include more than 15,450,000 veterans in 2017 (National Center for Veterans Analysis and Statistics, 2017)—such that a small sample faces an enormously large challenge in obtaining some semblance of representativeness. Furthermore,
purposive samples’ small size means that any replication (in order to show consistent explanatory power throughout the population) might require numerous different samples, collected from various populations—which may never be able to confirm the results anyways (Bernard, 2002). In this sense, purposive sampling for such a large military population might run directly into the problems of random sampling in resource costliness.

In addition, purposive samples’ reliance on ‘expert informants’ (i.e., targeted populations likely to share the necessary information) places a great deal of methodological trust in those informants’ own reliability and competency (Godambe, 1982). So, though a purposive sample in this context may target the sample such that they provide more insight into mental health reactions to service and subsequent decision-making, that targeting may very well yield participants that have some unique unseen bias toward the research and researcher that inhibits overall reliability (Bernard et al., 1986). Finally, it bears noting that one of the central drawbacks to most purposive sampling is its incorrect application. Perhaps used as a justification for avoiding the rigorous design and implementation of random sampling procedures, much of purposive sampling is collected as such but then analyzed as if it were a random sample—that is it say, “samples may have been selected purposively, but they are not being used purposefully to interrogate the data collected” (Barbour, 2001, p. 1116). Applied in this dissertation’s context, any conclusions would have to be interpreted not necessarily as pure correlational outcomes, but as limited to the unique characteristics of the sample collected.
Overall, this plausibility probe is strengthened by purposive sampling’s benefits, and with due attention to careful design and transparency, can accept/mitigate its overall drawbacks. Therefore, supported by theoretical design and consistent with the purpose of the study, a purposive sample survey was designed, submitted to the Georgetown University Institutional Review Board (IRB), approved by the GUIRB, and subsequent data was collected. In seeking to identify a sampling frame that would purposefully capture the experiences of the population, I turned to Army Reserve Officers’ Training Corps (ROTC) programs at two universities. These programs, whose primary goal is to train individuals for the Army’s officer corps, provide service-oriented classes and field training while allowing students to attend college with scholarship assistance. Graduating ROTC Cadets are commissioned as Second Lieutenants (2LT) in the U.S. Army, and commit to serving eight total years in the military (most often as four years on Active Duty, and an additional four years as a member of the Inactive Ready Reserve) (U.S. Army, 2017). After establishing sampling eligibility criteria including (1) must be a graduate of an Army ROTC program and (2) have an email address, I contacted several Army ROTC offices of similar size and student composition in the interest of surveying their alumni and received approval for sampling from two: the Georgetown University Army ROTC program (Hoya Battalion) and the University of Maryland Army ROTC program (Terrapin Battalion). To recruit participants, survey mechanisms were delivered to Battalion personnel, who in turn deployed them to the known email addresses of alumni that the Battalion maintained.
These Army ROTC-trained officers represent a particularly useful and informative subset of overall military servicemembers with combat experience able to detail those experiences, their reactions, and their policy preferences. Though levels of combat exposure necessarily differ across military branches, ranks, and occupational specialties, Army personnel traditionally deploy to combat scenarios in higher numbers than the other branches, granting the highest likelihood that a branch-specific cohort has combat experience within it. Granted, in the U.S. Army officers only make up approximately 18.1% of Army active duty forces compared to 81.9% enlisted personnel—yet, this ratio is closer than the average officer-to-enlisted ratio across all DoD active duty forces, suggesting greater combat accessibility than some other branches (Office of the Deputy Assistant Secretary of Defense, 2012). Importantly, lower ranking company grade officers (e.g., 2LT, 1LT, and CPT) like those who would be recent alumni of ROTC programs represent approximately 61% of all active duty officers in the Army—suggesting that while officers may have lower combat exposure numbers overall, the greatest exposure comes from the lower-ranking officers represented by individuals like ROTC graduates within their first few years of service (Office of the Deputy Assistant Secretary of Defense, 2012).67 Thus, this purposive

67 Note that, of course, not all officers are ROTC graduates; however, data approximates ROTC-commissioned officers represent between 40-50% of all Army officers, with remaining officers commissioned from Academy/Officer Candidate School/other sources (U.S. Government Accountability Office, 2013)—meaning ROTC programs “produce almost twice the number of officers as do [the] academies” (Leal, 2007, p. 480).
sample of ROTC graduates importantly fulfills the expectation of some combat experience, even if admittedly at a lower likelihood than enlisted personnel.

However, where this subset perhaps becomes even more uniquely well-suited to purposively collecting information tailored to the study at hand is in their ability to accurately and precisely identify both their reactions to those experiences and ultimately their policy preferences. Given one of the key defining qualities of the ROTC-trained officer— that as a Cadet they necessarily attended and graduated from a four-year college or university—it is reasonable to presume that this particular subset of the overall population of servicemembers with combat experience is able to recognize and identify nuanced shifts in their mind, brain, and body, as well as the informational inputs in evaluating and selecting foreign policy preferences and decisions. To be clear, this is not to indicate that officers trained in four-year educational settings are ‘smarter’ than any other subsets of the overall military population; it simply means that their overall psychosocial awareness (Bartone, Snook, Forsythe, Lewis, & Bullis, 2007) and literacy/numeracy skills are designed to—and shown to—increase over the course of their ROTC program educational attainment (Leal, 2007), such that the reliability of their responses on the survey instrument is demonstrably assured.68

68 Notably, Army ROTC utilized several iterations of mental ability and psychometric tests throughout the All-Volunteer Force era designed to ensure strong performance among ROTC officers, but these tests were rarely if ever implemented as actual screening tools (and therefore, confer no official ‘guarantee’ of pre-selected cognitive performance). Indeed, the last iteration of the test, the Officer Selection Battery (OSB) was dismissed in 1996 (Coumbe, Condly, & Skimmyhorn, 2015). However, ROTC cadets do have academic requirements they must maintain in order to earn a
Interestingly, while a purposive Army ROTC program sample is clearly primed to yield interesting information about servicemembers’ combat experiences, their overall mental and physical reactions to those experiences, and their foreign policy decision-making, there is another reason this group is an ideal contribution to the overall plausibility probe: ROTC programs tend to provide one of the most balanced racial, gender, and ethnic makeups in the armed forces. Factors that would be immensely difficult to standardize across a random sampling procedure are structural features of many ROTC programs; they commission a more equivalent ratio of men to women than other sources, and commission more officers of color than traditional commissioning sources (Leal, 2007).

Details on the specific Hoya/Terrapin Battalion demographics and responses are considered in detail in Section IV, but overall, the reasons motivating their selection as well-suited purposive samples are clear: they serve as an ideal incubator for informative confirmatory and/or contradictory evidence regarding the theory’s main variables, while providing diversity across other potentially confounding variables.

**Collection Method**

This study deployed an online survey as the most appropriate collection method for this piece of the plausibility probe, as this format of survey holds several strengths specific to eliciting the necessary information from the sample at hand. For instance, it scholarship, as well as specific academic benchmarks they must maintain while in the program, which ultimately account for 40% of their Order of Merit List rank.
provides a high degree of anonymity to survey-takers, allowing them to mask any visual/vocal identifying features and in doing so, making it more likely they share information about highly personal and potentially stigmatized information this theory seeks to elicit from them (Newman et al., 2002). Online surveys are also particularly well-suited to accessing a group like the military that is high in geographic dispersion, high in assignment turnover, and potentially high in barriers to access (for those posted abroad or on military bases). In other words, though getting access to members at in-person locations may be excessively difficult and telephone numbers may routinely change, by virtue of being both an alumnus of their respective University and a member of the military, each of the servicemembers in this purposive sample is guaranteed some access to a stable email address (and likely, a computer). Furthermore, there is a stark rate of online survey administration within the military, such that this format may align neatly with their expectations and thus be more appealing than other methods of administration. Indeed, military servicemembers have displayed more support and satisfaction with online surveys than civilians in limited samples (Thompson, Surface, Martin, & Sanders, 2003), in addition to showing equivalent response rates to civilians—suggesting that even the familiarity with such methods of administration does not generate any response fatigue (Thompson et al., 2003).69

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69 However, there is some evidence that while military response rates remain equivalent to civilian rates, the totality of these responses is declining in both groups over time (Edwards, Rosenfeld, Booth-Kewley, & Thomas, 1996; Newell, Rosenfeld, Harris, & Hindelang, 2004).
Of course, these multiple strengths do not correct for the numerous drawbacks that exist with online survey data collection—including and not limited to the widely documented low response rate (Baruch, 1999; Newell et al., 2004), the potential for technological/user error, and/or respondents feeling unable to ask questions or clarifications of the researcher. However, when comparing the cost/benefit assessments of telephone, focus group, or emailed surveys, I argue the maximum benefit (and mitigated cost) is best achieved with this particular style.

Several distribution methods are available for online survey procedures with independently collected samples, largely varying based on cost of access to the survey design platform (and, consequently, the availability of certain features). Free platforms (e.g., SurveyMonkey, Google Forms) allow universal access to researchers looking to host and deploy online surveys, though the free versions come with limited options in question/response formats and survey flow design. Low-cost platforms (e.g., FormSite) offer slightly more functionality than unpaid options, while higher-cost platforms (e.g., Qualtrics) offer elite functionality primarily targeted at academic institutions. This study was conducted using Qualtrics, via a licensed account provided by the Georgetown University Department of Government. It was constructed within Qualtrics, and then delivered to the ROTC email listservs with a brief front-matter email and a link to the survey URL. Respondents were required to click the URL link to activate the survey, at which point they completed their informed consent form. Respondents then accessed the body of the survey, and were able to complete the survey at any pace within two weeks of clicking the initial link. When they finished the
survey or the completion window passed, Qualtrics collected and stored the responses. This survey included a digitally stored ‘cookie’ placed on individual respondents’ browsers that prevented them from taking the survey more than once. The survey was open for responses for approximately three months, with two reminders for respondents to access/complete it.

**Questionnaire Design**

As noted earlier in this Section, the content of this online survey is one of the defining features of this study’s mixed methods monostrand design, as it explicitly incorporates elements of both quantitative and qualitative methodologies. Specifically, it utilized primarily qualitative questions and “quantitized” the data, in that all questions asked respondents to select categorical qualitative responses that were then converted, treated, and analyzed as numerical responses (Teddle & Tashakkori, 2009, p. 149).

The questions and responses utilized in the survey were a product of deductive scale development, in which the in-depth literature review and theoretical development of this plausibility probe provided the knowledge necessary to be assured of their reasonable content validity — and reasonably nullified the need to run a pilot study of this study as a content validity assessment (Hinkin, 1998; Schriesheim, Powers, Scandura, Gardiner, & Lankau, 1993). After all, though the connective theory

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70 The survey instruments either closely or perfectly approximated existing validated instruments in nearly all instances, as considered below (with one important exception:
advanced in Section II is new, validated theories (and assessments) across the military service, dysregulation, and policy decision-making literatures offer significant knowledge and examples for constructing a survey with such validity (Ironson, Smith, Brannick, Gibson, & Paul, 1989; Veigal, 1991). In other words, there is reasonable belief that a survey that is a sum of individually validated pieces would reflect such validity in its entirety. Questions were reviewed to ensure they satisfied key features of effective survey wording (e.g., simple language, likelihood respondent has necessary knowledge to reply, no objectionable or double-barreled content) (de Vaus, 2013), and any individual measures deemed unsatisfactory or irrelevant were omitted in the newly constructed questionnaire. The repurposed questions that were used covered content across the typical behavior, belief, knowledge, attitude, and attribute categories (de Vaus, 2013; Sapsford, 1999), with an emphasis on questions inquiring about behaviors (e.g., establishing what respondents have done/are doing), attitudes (e.g., establishing what respondents think is/is not desirable, both in direction and intensity), and attributes (e.g., establishing information about respondents’ personal demographic characteristics). Minor editing of some question content occurred in order to minimize any response bias from boredom, fatigue, or distraction (Edwards, 1957; Schmitt & Stults, 1986; Schriesheim & Eisenbach, 1990; Warwick & Lininger, 1975).

In addition to closely or perfectly approximating existing question formats for the sake of content validity, response formats from the original survey instruments as noted later in this Section, trauma symptomatology reporting derived from Heller and Heller’s (2001) TSS is a self-report measure, not peer-reviewed).
were similarly replicated where appropriate. Most questions were accompanied by closed-ended response formats for categorical variables, varying from binary choice formats, to elective checklists, to multiple choice nominal/ordinal formats. A notable number of symptomatology questions made use of 5-value Likert scales (Likert, 1932), as the reliability of such mechanisms is shown to increase up to the use of five points before holding steady (Lissitz & Green, 1975; McKelvie, 1978). These responses were worded with a neutral point in the center of the scale (as an absence of opinion is still an informative outcome for a plausibility probe, and particularly essential for the theory at hand) (Reid, 1990). Importantly in the context of the mixed methods design, all survey questions in this instrument were qualitative in content and responses—e.g., respondents selected written statements in the binary, checklist, and multiple choice formats—and were then converted to either direct quantitative numerical scale ordinal formats, or in some cases, were further transformed into additional quantitative interval-level variables in order to add further exploratory analysis (for example, respondents checklist-selected qualitative replies of ‘yes/no’ in identifying specific combat experiences, which were also converted to a binary quantitative dummy variable of 1/0, which was then additionally converted to a continuous variable counting the total sum of yes (1) responses across the combat experience category).

Given this survey’s commitment to both replicating existing valid survey measures and

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71 It bears noting that in the past, specific written labeling of Likert mechanisms has been shown to have little effect on overall outcome as individuals inherently process the meaning of the 5-point scale (Armstrong, 1987).
thoughtfully editing/transforming those measures where appropriate, the questions
and responses were employed with reasonable confidence in their overall reliability and
validity. A replication of the survey instruments is provided in the Appendix.

Questions measuring the first (antecedent) independent variable—overall
exposure to traumatic combat experiences—were specifically replicated from prior
validated measures including the Combat Experiences/Exposure Scale (CES) and
Combat Experiences/Exposure Scale-Revised (CES-R) (Bryan & Cukrowicz, 2011;
Guyker et al., 2013; Hoge et al., 2004; Keane et al., 1989; Killgore et al., 2008), with
additional questions derived from the Laufer Combat Scale (Gallops, Laufer, & Yager,
1981) and the Deployment Risk and Resiliency Inventory (King, King, Vogt, Knight, &
Samper, 2006). Prior evaluations of such scales found evidence of internal consistency
and convergent/discriminant validity, and emphasized the influence of “casting a wide
net” in accurately assessing deployment-related experiences (Guyker et al., 2013, p.
377). As such, 34 experience options were deemed relevant for inclusion and replicated.
Respondents were presented with a written question asking them to identify which of
the individually-listed combat experiences they were exposed to at any point during
their past combat deployment(s), at which point they used a closed checklist format to
select or de-select certain experiences from the 34 options. These qualitative yes/no
indications were quantitatively transformed and coded as ‘1’ (yes) or ‘0’ (no).

Meanwhile, questions measuring respondents’ values on the second
(intervening) independent variable—level of ANS dysregulation—assessed the
presence and severity of physiological, emotional, cognitive, behavioral, and spiritual
challenges following combat service. Specifically, respondents were asked to assess how severely specific examples within each category of symptoms affected their daily lives. These questions were adapted from existing research (Heller & Heller, 2001; Stanley & Schaldach, 2011) and self-report questionnaires utilized throughout the trauma literature (Elhai, Gray, Kashdan, & Franklin, 2005), but relied largely on the content wording and ordinal response formatting introduced by Heller and Heller (2001) in their interpretation of these instruments (in the TSS; Trauma Symptom Survey). Importantly, though Heller and Heller (2001) offered numerical scales that corresponded to qualitative statements in their instrument, this questionnaire only offered respondents qualitative statements from which to select the impact of a symptom on daily life (ranging from ‘no effect’ to ‘major effect,’ with the option of ‘I don’t know/No response’), as a means of standardizing the questionnaire’s formatting among content and response options (and thereby upholding/improving its validity). That said, once collected the qualitative questions and replies were subsequently transformed into both quantitative ordinal variables (e.g., numerical ranking of each individual symptom’s severity) and continuous variables (e.g., total symptoms experienced and average symptom ranking).

72 The TSS reflects many of the principles of the most widely-used self-report trauma symptom instrument, the Trauma Symptom Inventory (TSI) (Briere, Elliott, Harris, & Cotman, 1995; Elhai et al., 2005), while offering a non-response option not included in the TSI (recalling once again that an absence of opinion is an informative outcome for the plausibility probe). That said, the original TSS survey was also designed as a self-report instrument, introduced in a non-peer-reviewed manuscript, limiting some of its overall inferential power.
Finally, questions and responses evaluating the dependent variable—attitudes and preferences on general issues of foreign policy and U.S. military activity—made use of several existing surveys on foreign policy issues and decision-making. These included the Foreign Policy Leadership Project surveys (Holsti & Rosenau, 1999; Rosenau & Earnest, 2004), the Triangle Institute for Security Studies (TISS) Survey on the Military in the Post-Cold War Era (Feaver & Kohn, 2001), and the Chicago Council on Foreign Relations’ American Public Opinion and U.S. Foreign Policy Survey (Smeltz et al., 2014), with several questions rephrased or adapted to meet modern conceptualizations of enduring foreign policy issues. For a long time in traditional foreign policy circles, the so-called Almond-Lippmann consensus suggested that surveys attempting to capture public opinion on issues of foreign policy would find that the population “lacks coherence and structure with regard to foreign policy issues” such that, in addition to having little impact on actual foreign policy conduct, the public would be hard to reliably assess on such topics (Hudson & Vore, 1995, p. 219; see also Almond, 1950; Lippman, 1955). However, subsequent studies have both found stability (Achen, 1975; Caspary, 1970)—or, in the case of change, rational reasons for fluctuation (Mueller, 1973)—in American foreign policy attitudes (Hudson & Vore, 1995). Thus, this survey replicated several measures with cautious confidence that they would reflect a reasonable amount of internal validity on a highly complex social science topic. In particular, this questionnaire focused on replicating questions related to consensus ideological ‘poles’ that exist in foreign policy attitudes (e.g., interventionist or isolationist attitudes, neorealist or neoliberal institutionalist attitudes, etc.; Holsti &
Rosenau, 1979; Hudson & Vore, 1995), offering qualitative questions with closed-format nominal multiple choice formats. Per the mixed methods monostrand research design, these qualitative responses were subsequently transformed into quantitative ordinal responses ranked according to fulfillment of the foreign policy ideological extremes.

**Data Analysis**

A number of forms of data analysis were available in working with the original survey data collected, across the multitudinous forms of qualitative original data and its quantitized transformations. Regardless of form, a number of descriptive statistics—particularly cross-tabulations and graphs—are available that yield interesting ‘snapshots’ of both the qualitative and quantitative elements the questionnaire was able to capture, both in regards to relationships between and among the independent variable(s) and dependent variable, as well as within the variables themselves (in the case of the various forms of grouped variables included) and among demographic variables and variables of interest. Beyond straightforward descriptive statistics, the variety in both original and transformed variable formats allows for a notable amount of interesting statistical tests to be applied—however, that variety (in addition to the small sample size in this stage of the overall plausibility probe design) also means that there are a number of limitations to the list of analytical techniques available that must be considered.

One of the central concerns for small sample sizes is the inability to reliably use parametric statistical tests on the study, due to concerns over the normality of variable
distributions. As generally conveyed in the prior section on sampling and power analysis, by committing to a purposive sampling design and its concomitantly small sample size, this particular study relinquishes some convincing explanatory power and external validity in the interest of investigating interesting relationships related to the overall theory development. In practice, this means sacrificing parametric tools, which typically require assumptions of normality—and thus, by the law of large numbers, larger samples—in overall variable distributions in order to reliably execute certain analyses. As such, this study will focus on incorporating a number of non-parametric tools, including Spearman correlations, Principal Components Analyses, and Kruskal Wallis tests, as a means of analyzing various combinations of relationships within and among the variables of interest.

However, at the same time, it bears noting that while the purposive sample obtained is indeed small, it does not approach the significantly small samples (e.g., N =<5) that often motivate the sole use of non-parametric models. Indeed, samples of N=50-100 can technically proceed with the use of parametric models so long as the effect size is large, as sample sizes greater than five have been shown to yield nearly-correct answers even for manifestly non-normal and asymmetric distributions (Boneau, 1960; de Winter, 2013; Norman, 2010; Pearson, 1931). As a consequence, and given the nature of the plausibility probe, this study also considers a limited number of parametric models in its general analyses of the data collection, including Pearson correlations and both bivariate and multivariate logistic regression.
Importantly, even when using either parametric or non-parametric tests, a significant concern beyond sample size remains—specifically regarding answer validity. As noted in both the mixed methods design and questionnaire design sections above, this study actively ‘quantitizes’ a number of qualitatively-designed questions. However, there is notable controversy over the inherent data that is lost and/or misclassified in this process, in that the numerical translation assigns measurable distance to concepts that cannot necessarily be measured as such. Indeed, this concern is often raised specific to the transformation from qualitative Likert scale to numerical scale (Jamieson, 2004; Knapp, 1990). However, there are several reasons to proceed with confidence in these particular variables’ transformations. For instance, there is evidence to suggest that quantitized Likert scales often truly do capture their underlying phenomena of interest (Allen & Seaman, 2007). Indeed, just as the above argument says there is no way to prove if the qualitative and quantitative distances match up, there is no way to disprove that the qualitative and quantitative distances match up.

Furthermore, though in the past many argued that ordinal scales cannot be presumed to be normal and therefore cannot be utilized in parametric testing, a number of more recent studies have found that parametric statistics are robust even for Likert scaled data (Carifio & Perla, 2008; Norman, 2010). Indeed, these authors note that while this does not yet signal that parametric measures are most appropriate for ordinal data,

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73 As Norman (2010) notes, who can say whether the difference between numerical measures of ‘1’ and ‘2’ in an ordinally quantitized scale is equal to or different than how a respondent conceptualizes the difference between ‘strongly disagree’ and ‘disagree’ (see also Gaito, 1980).
they can be trusted enough on such data that they make for good pilot analysis tools (Allen & Seaman, 2007). Indeed, one analytical tool utilized—Principal Components Analysis—is technically designed for non-ordinal measures and linearly correlated variables, but its restrictions are often relaxed such that it is used widely in ordinal data analysis across the social/psychological sciences. As a result, the data analysis of this portion of the overarching plausibility probe conducts both its parametric and non-parametric analyses on ordinal data with confidence in the overall answer validity.

**Ethical Considerations**

As a final note to the detailed consideration of Study 1’s design, sampling, questionnaire structuring, data collection processes, and data analysis procedures, it is important to highlight the various ethical safeguards that were built into the study at hand. In particular, there are two central issues of importance to designing and implementing ethical studies in this cross-topic field of trauma and policy preferences that were explicitly addressed in each stage of the execution.

First, protecting the privacy and confidentiality of respondents was paramount. Of course, de-identified data is an essential tool to almost all surveys; however, it was particularly essential in this particular study for two reasons. For instance, given the arguments advanced in Section II’s comprehensive theory regarding the adverse consequences of social hierarchies in the military—namely, that such hierarchies can create the prefrontally-mediated override conditions that foster and motivate inhibited activation discharge, and subsequently, ANS dysregulation symptoms—there is reason
to believe that exposing the identity and mental health characteristics of any respondent may cause a (further) deterioration of their own mental and physical health. As they seek to theoretically hide and suppress information and reactions, any involuntary exposure of that information and reactions may provoke intense reactions or future accumulation of dysregulation. As such, though it seems as though protecting individuals’ confidentiality paradoxically enables the continued suppression of symptoms, in this context it remains a necessary tool for limiting additional dysregulatory reactions.

At the same time, as noted in the sampling procedures, anonymity is an essential tool for eliciting the information necessary to informatively investigate and evaluate the theory at the heart of this plausibility probe. In other words, it is not merely that identifying respondents may damage their health; it’s that the prospect of identifying them might pre-emptively inhibit their sharing information in the first place. Thus, ensuring privacy acts as both an important enabler for collecting the necessary data, in addition to serving as a buffer against the potentially damaging effects of that data’s exposure.

Therefore, to protect respondents’ privacy in such a small sample, I focused on using only general non-identifying questions—i.e., I did not ask specific details about name, age, location, assignments, etc., and relied solely upon numerical identifiers for individual units of analysis. Beyond limiting responses to one survey per IP address, I did not save or store IP address information or email addresses accessed by the survey (indeed, recall from the sampling procedures that I did not even formally obtain
individual emails to administer the survey to; rather, intermediaries assigned to both Battalions administered the survey to their predetermined ‘listservs’ of alumni).

Respondents were required to acknowledge the informed consent document prior to gaining access to any of the actual survey instruments. Finally, in addition to password protecting the digitally collected data both in Qualtrics and, once downloaded from the software provider, in individual data hard-drives, I stored the hard-drive data in individually locked file cabinet drawers. The collected data has not been viewed or accessed by anyone other than the Principal Investigators named in the original IRB Study Approval. As such, this study secured the necessary amount of privacy and confidentiality for its respondents both within the data and in the data’s distribution.

The second and related issue of ethical concern in this study’s design was effectively protecting respondents’ physical and mental health. As previously noted, there is a unique quality to the kind of dysregulation considered through earlier sections, wherein bringing attention to symptoms can actually risk opening and escalating the experiencing of those symptoms. Indeed, this is a deeply studied (if not widely addressed) phenomenon in studies of mindfulness practices. Recall that as Britton (2014) introduced in the Dark Night study, practicing mindfulness can actively impair performance across cognitive, emotional, perceptual, psychological, and physiological realms even when practiced correctly; among those in the project with prior trauma histories, 44% endured more severe and longer symptoms than those without trauma histories. The processes involved in becoming mindfully aware of symptoms risk flooding the survival brain with additional information and activation (and,
subsequently, re-traumatizing the mind-body system further) (Lindahl et al. 2017; Stanley, in press). This is the same motivation behind the MBSR program’s aforementioned warning that the course is not indicated for anyone currently suffering from PTSD or other mental illness (Center for Mindfulness in Medicine, 2014; Santorelli, 2014).

As such, it was important that any survey questions be designed with the explicit intent of doing no harm to the participant. Of course, a survey question is not functionally equivalent to the intricate processes involved in becoming mindfully aware of symptoms of activation; however, out of an abundance of caution and commitment to the do no harm principle, it is reasonable to expect questions asking participants detailed information about their emotional, psychological, cognitive, physiological, and spiritual experiences—in addition to detailed questions about potentially traumatic memories in their deployment experiences—might elicit adverse nervous system reactions.

Thus, I addressed this risk in two ways. First, as noted in the questionnaire design section, I carefully designed the individual survey instruments according to previously designed instruments, often from fields of trauma and psychological research. Given that most have been designed for, implemented in, and evaluated using groups with similar dysregulation symptomatology, and have yet to reveal any structural exacerbation or re-introduction of symptoms, we can proceed with the reasonable assumption that they are unlikely to trigger a flooding of participants’ nervous systems. That said, I provided a second bulwark against this small but real risk
in the form of active guidance for any participant experiencing symptoms during the survey. In addition to the standard informed consent form explaining that survey participants could exit the survey at any time, that information was repeated on every page of the survey—along with the contact information for three specific support services (call/text/online chat support through the Veterans Crisis Line; call support through the Combat Call Center; and call/online/in-person support through State/Local VA Centers). This careful attention to minimize potential re-activation and worsening of symptoms through previously tested instruments, well-informed participants, and clear avenues for assistance allowed this study to proceed with a firm sense of confidence in its ethical protection of participants’ mental and physical health.

Summary

In sum, the original small-n survey deployed as Study 1 of the theory’s plausibility probe uniquely satisfies the goals of the probe in a number of ways. Its targeted purposive sampling design may allow for the illumination of information relevant to the theory that may not otherwise be revealed, and does so among participants particularly well-prepared for identifying and sharing their insights. Its data collection processes minimized procedural costs, while its questionnaire design was constructed to elicit unbiased, externally valid, and reliable information from respondents. In addition, its mixed methods monostrand analytical techniques made use of a number of qualitative-to-quantitative transformations, in order to use a number of interesting statistical techniques on the theory’s hypotheses with reasonable
assurance of the study’s overall internal validity and explanatory power. In sum, the small-n pilot study provided an ideal implementation and testing of the theory offered, such that the results—whether confirmatory or contradictory—should offer the kind of interesting information necessary to further shape, and test, the theory at hand.

In addition, to my knowledge, this study represents the only comprehensive survey assessment of combat experience, trauma, and foreign policy preferences to-date. In other words, not only does this small-n purposive sample provide a strong investigation of the theory at-hand; it provides an essential investigation of the multi-stage hypotheses the theory offers. As additional studies considered in this Section will demonstrate, there are various ways of informatively testing the relationship between combat experience and ANS dysregulation symptoms (i.e., H1), and various ways of informatively testing the relationship between dysregulation and foreign policy preferences (i.e., H2A and H2B)—but this survey offers the first, and thereby only, investigation into the specific relationship among all three hypotheses of interest.

Of course in pursuing this groundbreaking contribution, the small-n survey made several methodological choices that sacrificed some of its broader explanatory power. Though its particular constellation of sampling, data design/collection, and data analysis processes convincingly suggests it will most accurately probe the theory at hand, there are undoubtedly other constellations of such factors that could yield additional informative probes of the individual hypotheses of said theory, perhaps with greater inferential impact. Thus, given that the most effective plausibility probe is one that also considers these alternative methods of theory testing to learn as much as
possible about the phenomena of interest, Part 1 proceeds to consider additional hypothesis-specific analyses in Part 2.
SECTION III

PART 2

Study 2 – A Comparative Survey of Veterans and Civilians

The second analysis designed to probe the plausibility of Section II’s theory was a large-N random sample survey of veterans. Like the comprehensive theory-testing of Study 1, Study 2 aims to capture some broad-based dynamics about the relationship between all three of the variables of interest: combat service, ANS dysregulation, and foreign policy. However, it does so with some key methodological differences. Firstly, though it vastly improves upon the inferential power of the prior study by collecting a large sampling frame of randomly selected veterans and civilians, the data collection design heavily favors the first two variables of interest (i.e., connecting military experiences and ANS dysregulation) with only loose ties drawn to a small set of vaguely drawn foreign policy questions. In other words, it serves as an ideal plausibility probe foil to Study 1: it offers more statistically generalizable, valid, and reliable insight, but does so with a lessened degree of theoretical specificity.

This survey analysis also differs from Study 1 in its use of a multistrand design. In this design, the study involves three separate strands of research in which the conceptualization, methodological, analytical, and inferential stages adhere

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74 Though note that also like Study 1, it is unable to control the self-selection effect referenced throughout this dissertation; due to the nature of the survey design and administration, there is no way to distinguish the time in which attitudes emerged in relation to military service.
independently to their own application of qualitative and/or quantitative research traditions (Teddle & Tashakkori, 2009). Specifically, Study 2 uses a concurrent conversion mixed design, in which the data is transformed from qualitative to quantitative for one analysis of a veteran sample, from qualitative to quantitative for one analysis of a civilian sample, and complemented by a separate strand focusing just on qualitative data and analysis for the veteran sample.

**Sampling Procedures – Veteran Sample**

The goal of Study 2’s large-n random sample surveys was to produce (a) a collection of respondents with military experience who were able to identify their dysregulation symptomatology, as well as a limited amount of information about their general foreign policy preferences, and (b) a collection of comparable civilians able to identify their general foreign policy preferences. In collecting such a sample, the survey would provide insight into symptoms of dysregulation, and to a lesser extent foreign policy preferences, for a target population of all U.S. veterans (and allow for their comparison to a generalized civilian sample).

This sample was collected according to random sampling procedures. As briefly alluded to in the consideration of non-random sampling procedures in Study 1, random sampling—in which each member of the sampling frame has the same probability of being selected for inclusion (Piazza, 2010), is widely regarded as the most desirable form of sampling for statistical analyses. By reliably diversifying the sampling frame across multiple independent characteristics, random sampling reduces the influence of
biases, reduces assumptions, and thus allows findings extrapolated from the sample to be extended to the entire sampling population (Godambe, 1982; Neyman, 1934; Snedecor, 1939; Topp et al., 2004). Granted, some assumptions are still made in operating with pure probability statistics; however, random sampling minimizes them to the smallest possible degree, allowing data to be interpreted at ‘face-value’ (Godambe, 1982). Though non-random sampling suggests results are limited to the community studied, random sampling generally guarantees the kind of external validity that allows results to be applied to multiple communities (Bernard, 2002; Godambe, 1982; Karmel & Jain, 1987).

Of course, even this gold standard of inferential sampling procedures comes with its own drawbacks, largely surrounding the difficulty in obtaining such a perfectly randomized sample. Given the higher costs it takes for a researcher to undertake a true randomized design at something like a national level (Bernard, 2002; Pew Research Center, 2017; Snedecor, 1939) and the various ways in which humans tend to group together (Danz et al., 2005; Neyman, 1934), the circumstances rarely allow for any truly randomized form of sampling. Costs are particularly notable given that the preferred method of random sampling, Random Digit Dialing (RDD), has incorporated cell-phone usage into its methodology as more households (approximately 12% in the U.S.) have transitioned to ‘cell-phone only’ lines (Link, Battaglia, Frankel, Osborn, & Mokdad, 2008). Cell-phone dialing is reported to cost roughly two times the amount of a landline call, such that hybrid landline/cell-phone surveys are ultimately estimated to cost upwards of $79,500 per 1,000 completed interviews (including costs of calls and labor).
(Link et al., 2008). Indeed, even mailed surveys to random samples of addresses are estimated to cost upwards of $70,900 per 1,000 completed interviews (Link et al., 2008). Put simply, the statistical power of a random sample comes at a steep price to researchers. This cost is mitigated, of course, when public and private research firms elect to make their data available for access. This generous contribution to the overall body of social scientific knowledge allows individual research projects, including this dissertation, to undertake analyses of data that would otherwise be prohibitively costly and thus inaccessible.75

In the context of locating a sampling frame of interest, Study 2 thus utilized the random sampling procedures and data collection of the Pew Research Center—capitalizing on the strong inferential benefits of random sampling, while simultaneously completely mitigating the procedural costs (Pew Research Center, 2011b). The sampling eligibility criteria was straightforward: (1) respondents were required to be a prior member of the U.S. armed forces, and (2) were required to have access to either a landline or cell phone. To recruit participants, the Pew Research Center and their contracted research firm Social Science Research Solutions (SSRS) used a two-stage RDD design (wherein respondents were pre-screened for veteran status from an initial larger sampling pool in stage one, then randomly administered the

75 Of course, when using such data, there is a separate drawback worthy of consideration—i.e., that using other studies’ simple random sampling data necessarily relinquishes a researcher’s control over content. This drawback is considered in the Questionnaire Design section.
survey in stage 2). In stage 2, respondents were administered the survey instruments
either by landline or cell phone and their responses were recorded.

This broad-based random sample of veterans of the U.S. armed forces represents
an almost ideal sampling frame for illuminating how the theory advanced in Section II
operates in practice. It is particularly appropriate for the plausibility probe; after all, its
large random design means that key independent variables like military experiences,
demographic characteristics, branches of service, ranks, and more should all be
represented, randomly distributed and approximately normal across the sample
obtained. In this way, nearly every important factor—whether complementary or
competing to the theory at hand—will be considered. Indeed, whereas Study 1’s
selection of ROTC graduates provided the unique assurance that respondents would be
able to aptly identify and report their experiences, feelings, and attitudes, Study 2’s
large-scale survey still includes variables for factors like education—allowing a similar
guarantee to be controlled for if desired. Similar arguments can be made for its
collection of information on racial/ethnic makeup—though the Study 2 survey falls
short in highlighting these elements as clearly as Study 1, they are near-guaranteed to
exist within the large sample in some form. Plus, one could easily argue that due to its
likely representative sampling of enlisted personnel (in contrast to the all-officer cohort
of Study 1), the sampling procedures used in Study 2 offer at least as much insight—if
not more—into some of the dynamics of the theory.

Detailed information on the final sample characteristics and replies for Study 2 is
offered, along with outcomes of all of the other studies, in Section IV—but overall, it is
clear that the random sampling procedures utilized by the Pew Research Center in their investigation of veterans of the armed forces nearly perfectly suit the plausibility probe at hand, and as such, were an appropriate methodological choice to include.

**Sampling Procedures – Civilian Sample**

The goal of Study 2’s other large-n random sample survey was to collect a sample of respondents both with and without military service who were able to identify their specific attitudes across a number of foreign policy issues. In collecting such a sample, the survey would provide essential insight into what motivates foreign policy preferences across the population of all citizens.

Much like the veteran sample, this sample was collected according to random sampling procedures, and as such allowed every member of the sampling frame the same probability of inclusion (Piazza, 2010). Once again, doing so allowed this study to minimize any biases in the data collection and thereby meet the high assumption standards of most major statistical analyses — meaning that the results of this civilian/veteran sampling could generally be reliably extrapolated to the entire population of civilians/veterans (Bernard, 2002; Godambe, 1982; Karmel & Jain, 1987). The inferential benefits of this sampling procedure come at a cost, of course — namely, the high monetary costs of a RDD survey considered in the previous section (Link et al., 2008), as well as the content validity (considered below).

Once again, however, the central sampling drawbacks to RDD are mitigated when data is collected and disseminated by existing organizations, as is the case in
Study 2. The Pew Research Center sponsored a survey conducted and collected by Princeton Survey Research Associates International (PSRAI), with a sampling frame eligibility criteria of (1) must be an adult living in the continental United States with access to a landline or cell phone (Pew Research Center, 2011a). To recruit participants, PSRAI used both simple and systematic forms of random sampling, contacting potential sampling units with landline and cell phone access and recording their responses. Notably, though the sample was weighted to match population parameters for a number of key demographic variables, the total number of veterans sampled was slightly higher than the proportion of veterans in the total population (Pew Research Center, 2011a; U.S. Census Bureau, 2017).

This large, randomly-distributed sample of civilians and veterans represents a unique but essential sampling frame for exploring the application of the theory advanced in Section II. Though evaluating how the key relationships between combat service, ANS dysregulation, and foreign policy preferences interact within and among military servicemembers—as done uniquely in Study 1 and the veteran sample of Study 2—is essential, equally essential is providing a control group or baseline that allows the theory’s plausibility to be falsifiable. In other words, while in-depth exploration of the population of interest (veterans) was merited in prior studies, a direct comparison of that population of interest to a reasonable parallel (civilians) is equally vital. Furthermore, the random nature of the sampling for both groups ensures that features essential to the accurate collection of information—i.e., education and experience that allows respondents to accurately assess, identify, and select responses on the
questionnaire items, and representative dispersion of background experiences—should be randomly and normally distributed across the sample.

Specific information on the characteristics of the sample obtained for this civilian sample are provided along with the data analysis in Section IV Part 2, but as the sample procedures make clear: this data once again provides a key contribution to the probe of the theory’s overall plausibility.

Data Collection Method – Veteran Sample

As noted above, Study 2 utilized RDD as a common and appropriate sampling method for random sampling (with a small proportion of respondents replying to an online questionnaire after having been contacted through RDD) (Pew Research Center, 2011b). The RDD sampling method confers several benefits that make it a data collection method well-suited to the plausibility probe at hand. For instance, the sheer speed and distance with which the sample can be accessed and have its data recorded make telephone interviewing a particular effective tool at obtaining deep, real-time information (Aday, 1996). In addition, its ubiquity as a survey method means many respondents are familiar and comfortable with the telephone interview format (Aday, 1996), and that as the interviewer is responsible for recording the information (not the respondent, as in an online survey), the detail obtained can often be more robust and human error minimized (Carr & Worth, 2001; Smith, 2005; Sturges & Hanrahan, 2004). Some qualitative evidence even suggests that respondents are particularly relaxed and detailed when providing personal information from behind the phone (Chapple, 1999;
Sturges & Hanrahan, 2004), such that the information necessary to assess the theory advanced in Section II might be revealed at greater depth and breadth than some other survey formats.

Yet, overall data is relatively mixed relative to the latter strength. Some researchers have found face-to-face interviewing to yield more information than telephone interviews, while others have found inconsistent information specifically related to the reporting of psychiatric symptomatology (Aquilino, 1994; Moum, 1998; Novick, 2008). Indeed, several researchers emphasize the important role of interpersonal cues like eye contact and social feedback as essential items for motivating disclosure of sensitive information (such as dysregulation symptoms), which telephone surveys obviously lack (Groves, 1990; Novick, 2008). However, this evidence flies in contrast to the argument advanced in Study 1, which suggests specifically that members of the military may be less inclined to share information as survey procedures become more identifying, due to the power of the institution’s clear social hierarchy—such that while sharing one’s voice on the telephone may yield less information than a completely anonymized online survey, it undoubtedly yields more information than an in-person survey. Thus, even though the information obtained may not be as detailed as other formats, the ease and breadth of the information obtained by telephone interviewing make it a particularly appropriate data collection method for evaluating the theory advanced in Section II.
Data Collection Method – Civilian Sample

As argued in the analytical design for Study 2, RDD is an effective data collection tool for a plausibility probe. In addition to the practical sampling (and therefore analysis) benefits it yields, its specific role in data collection may allow for more familiarity, and thus more detailed information to be shared and recorded (Carr & Worth, 2001; Smith, 2005; Sturges & Hanrahan, 2004). Evidence remains mixed as to how comparative and consistent the information shared is across interviewing modalities, but in general, there is good reason to expect that the voice identification of telephone dialing has only a minimal impact on servicemembers’ willingness to share (versus other survey delivery methods like an internet survey or mailed questionnaire), and no reason to suspect it impacts civilians’ willingness to share. Overall, once again, the depth and breadth that telephone interviewing achieves makes it a trustworthy data collection method for testing the plausibility of the theory offered in Section III.

Questionnaire Design – Veteran Sample

The multistrand concurrent conversion mixed design noted earlier as the research design for Study 2 is more straightforward than its description belies, involving two separate strands of data collection designs with certain qualitative and quantitative methods available for selection. Specifically, the first strand of the design sought to reflect the conversion mixed design collected in Study 1, in which qualitative interview questions are collected from respondents and converted into numerical formats available for statistical analysis. The second strand of the veterans’ design,
however, sought to maintain a consistent use of only qualitative methods—extracting,
analyzing, and drawing inference solely from a set of qualitative data collected from the
interview (i.e., no quantitative transformation). Lessons about the overall theory being investigated are then derived from both the converted and qualitative strands.

This design works particularly well within the context of the questions that were designed and asked by Pew Research Center and SSRS. The questionnaire involved both closed-ended and open-ended question formats, each of which was qualitative in nature (i.e., all questions asked for qualitative replies, rather than asking respondents to convert replies to quantitative measures). Respective response formats were similarly closed-ended or open-ended, either offering respondents a selection from a binary or multiple choice nominal/ordinal format or, in the instance of some questions, allowing respondents to offer unique open-ended replies. Importantly, almost all closed-ended response formats offered some form of neutral ‘Not applicable’/’Don’t know’/’Refused’ option (in keeping with the theme of neutrality as a valuable outcome for the plausibility probe). Across the question and response formats, the questionnaire reflected a strong amount of reliability, as a product of several rounds of pre-testing by Pew Research Center and SSRS (Pew Research Center, 2011b).

However, it bears noting for the purposes of this investigation that the use of publicly accessible data undeniably hampers the internal validity of the data collected for the overall plausibility probe, in that questions were often more narrow or imprecise than they would be if specifically tailored to this investigation. In other words, the lack of researcher control over the content designed for the questionnaire means that it may
be harder to elicit the information needed to accurately illuminate and evaluate the theory. Though proxy measures can be useful tools in such analyses (e.g., using variables coding combat service as proxy measures for coding trauma exposure), ultimately there is some degradation of content validity in the application of this outside data. In particular, while questions measuring the intervening variable (ANS dysregulation symptoms) existed, they were often indirect when compared to the level of detail offered in Study 1. Similarly, the questions related to the antecedent independent variable (combat experiences) and dependent variable (foreign policy preferences) were both indirect and infrequent in number. In sum, the content validity of the overall survey for Study 2’s purposes is sacrificed somewhat, even in exchange for more representative and convincing sampling.

**Questionnaire Design - Civilian Sample**

The conversion mixed monostrand design employed in Study 2’s civilian sample reflected elements of both Studies 1 and 2, specifically executing a qualitative data collection process, ‘quantitizing’ the qualitative responses derived from that process for the totality of the sample, and undertaking analyses and making conclusions based on the transformed data. The goals of this design align well with the survey questionnaire that was actually deployed by PSRAI, which was limited to a defined set of closed-ended questions with binary or multiple choice nominal/ordinal response formats.

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76 Of course, this does not indicate a degradation of content validity for the aims of Pew Research Center, but merely for the repurposing of the data for the study at hand.
Indeed, many responses made use of the binary format, such that respondents may have been forced to artificially represent their opinion within the confines of the two options offered. However, every question included a ‘Don’t know/Refused’ answer option, ensuring that when their opinions differed significantly from the two options offered they were able to choose a neutral option (thereby improving the information gleaned from the plausibility probe) (Pew Research Center, 2011a).

Much like in the veteran sample, a key drawback of the questionnaire design in the civilian sample is the concern over content validity of the questions. Using data from a survey instrument independently designed and implemented by outside researchers necessarily means it will lack the detailed probes necessary to fully illustrate the theory at hand. Furthermore, a broad-based sample of civilian attitudes on foreign policy still yields interesting data, even if the group of veterans it is statistically paralleled to is hampered in its overall ability to demonstrate the theory at hand. Thus, though the civilian sample sacrifices content validity and relevance to the overall plausibility probe perhaps more than any other analysis, it still arguably may yield essential information about falsifiability.

Data Analysis – Veteran Sample

Multiple qualitative and quantitative analytical tools were available for use as part of this concurrent conversion mixed multistrand design. In particular, in working with the quantitized data in the conversion strand of the design, the large and random nature of the sample allows for a number of interesting parametric and non-parametric
methods to be used (presuming the data meet the unique assumptions for each test). Note that this parametric analysis of quantitized data relies upon the same arguments advanced for Study 1—namely, that parametric tests are robust even for ordinally scaled data, and that they can be trusted enough to reveal accurate findings in piloted data. In particular, though Study 2 has the randomization necessary for parametric testing, the vast majority of its variables were auto-coded as binary/dichotomous response formats. As a result, much of the analysis made use of non-parametric chi-squared testing and multinomial logistic regression testing. Of course, this study also makes use of a number of descriptive statistics throughout, relying on cross-tabulations and frequency distributions in particular to provide an interesting illustration of the findings from within the all-veteran sample.

For the subsequent qualitative strand of the design, an entirely different set of analytical tools was employed to analyze the findings of a specific set of open-ended response variables. Several general categories of responses were derived from the data, at which point the responses were indexed according to their closest category of approximation. Where appropriate, subcategories were also derived and data indexed according to the values. Then, general patterns and trends were summarized in the overall qualitative analysis.

**Data Analysis – Civilian Sample**

Analyzing the quantitatively transformed qualitative data from the large-scale questionnaire of Study 2’s civilian sample made use of several traditional descriptive
statistics, as evidenced in cross-tabulation information provided in Section IV. In investigating within and inferring from the relationships between variables, this study made use of several parametric methods of analysis including the comparative use of multinomial logistic regression. As was explained earlier, these analyses rely on an acceptance that ordinal measures, whether in preserved or transformed versions, can be loosely treated as interval-level data. However, as noted in the section on questionnaire design, this particular survey also utilized many binary choice response formats—for which there is much less evidence about robustness in parametric tests, even in pilot studies. In exchange, this data analysis follows the practice of converting singular binary responses into accumulated continuous measures, which is accepted more logically in the literature (Carifio & Perla, 2008).

**Ethical Considerations**

Though it was impossible to enact ethical safeguards in the formal data collection process as it was employed by the original investigating firms, Pew Research Center and SSRS do provide reasonable assurance of their own ethical approvals for administering such surveys—for instance, by asking to speak with adults in the household. No formal informed consent is explained or provided; however, by virtue of phone contact there is a presumed recognition that the respondent can exit the survey at any time. There is an inherent risk not addressed in the questions about traumatic experiences and symptomatology, though arguably most questions were vague/indirect enough to provide reasonable assurances that they would not activate
the symptoms of dysregulation. Importantly, all data was reproduced by Pew Research Center and SSRS as de-identified data, meaning that Study 2 can wholly assure respondents of their anonymity, such that no reasonable expectation of harm to privacy or mental health can be expected from this separate analysis (Pew Research Center, 2011b).

Much like the veterans survey, it was impossible to implement any ethical safeguards in the administration of the civilian survey in Study 2, as the survey was designed, managed, and conducted independently by Pew Research Center and PSRAI. Furthermore, as these organizations explicitly note, neither is formally certified by an Institutional Review Board within their agencies. Yet, some added safeguards are included within the data, including only continuing the study for adults in households (even if not formally requiring informed consent or permission to continue) and the presumption that respondents knew the simple act of hanging up the telephone would exit the survey. Formally, PSRAI highlights that it adheres to the Code of Professional and Ethical Practices established by the American Association of Public Opinion Researchers, which lays out a series of general guidelines seeking to protect participants (AAPOR, 2017; Pew Research Center, 2011a).
SECTION III

PART 3

Study 3 – A Cross-Sectional Time-Series Study of Veterans in Congress

The third analysis designed to probe the plausibility of Section II’s theory was a cross-sectional time-series analysis of veterans in the U.S. House of Representatives. This study introduces a new, essential element into the plausibility probe: an examination of the relationship between combat service, policy preferences, and actual policy implementation. This is an important variation on the theory’s latter hypothesis—beyond the idea that dysregulation may exist and reliably guide preferences among military servicemembers, this study explores how such service may or may not actually lead to changes in official policy. Notably, none of the studies considered up until this point observe this specific effect—making it another ideal contribution to investigating and illuminating elements of the theory’s operations. Granted, it suffers a number of limitations similar to those of Study 2, which prevent it from being the comprehensive analysis necessary to definitely prove the theory’s elements. However, these limitations are mitigated by its comprehensive panel design, some of the proxy measures included for analysis, and the new insights that can be gleaned. In other words, Study 3 sacrifices some level of precision in the elements of the theory it is able to test, but adds a layer of sampling specificity and at least a moderate degree of theoretical specificity to yield an interesting exploration of the theory at hand.
Study 3 makes use of a monostrand monomethod design, wherein data that was collected was distinctly coded and analyzed using quantitative methods.

**Sampling Procedures**

The goal of Study 3’s time-series quantitative analysis was to produce a near-comprehensive set of data on military (and combat) service status and voting behavior for members of the U.S. House of Representatives from 2003-2012. Unlike the samples of Study 2—designed to collect samples of individuals that would have the capacity necessary to identify, articulate, and share their experiences—this sample was coded retroactively based on public record, meaning the only inclusion criteria were that an individual (a) be a member of the House at some point during the 108\textsuperscript{th} to 112\textsuperscript{th} Congresses and (b) have voted during 22 roll-call votes on issues related to the wars in Iraq and Afghanistan (Lupton, 2017).

This sample is particularly appropriate for the theory at hand according to several factors. First and foremost, it allows for the broadest investigation of veterans in political decision-making roles. Even though Congress has consistently shown a decline in the overall number of veterans serving in office, the large-N House provides one of the broadest possible standardized collections of those veterans (for instance, at the start of the 115\textsuperscript{th} Congress, 79 House members were veterans—a proportion technically smaller than the 19 veterans of the Senate, but wholly larger in the inferences that are allowed to be made) (Manning, 2017). Furthermore, the House roll call votes often serve as the first and most multitudinous mechanisms in congressional policymaking—
allowing legislators’ voting behavior to fall along a spectrum that is reliably attributed
to the individual legislator’s preference (Poole & Rosenthal, 2000). At the same time, the
specific kind of vote analyzed in this time-series sample—oversight roll call votes—
remains one of the most powerful and direct tools specifically relegated to Congress
(Campbell & Auerswald, 2015).

Focusing on the 108th to 112th Congresses yields its own benefits for the theory at
hand as well, namely centered on the war-related decision-making that this series of
Congress were undertaking at the time, as part of both OEF and OIF operations.
Specifically, these Congresses faced a series of oversight roll call votes that paralleled
both the early stages of these conflicts, as well as the perceived stagnation of progress
(particularly in the case of OIF) and the advent of the ‘surge’ strategy. Thus in this
sense, this war-time period provides a particularly ideal incubator for analyzing the role
of exposure and avoidance among combat veterans making foreign policy/defense-
related decisions. At the same time, the two particular types of roll call votes analyzed
(access to overall information about the wars and the redeployments of overall troop
levels) are particularly appropriate for mining the plausibility of the overall theory
(Lupton, 2017), drawing upon both personal knowledge of overall operations and
personal experiences with combat scenarios.

Of course, the sample readily comes with some drawbacks as well. As noted,
veterans in the House may be more in number, but that rate still hovers as a small
percentage of the overall sample (and a decline versus earlier Congresses) (Manning,
2017). In addition, there are a number of institutional and political pressures placed on
anyone in Congress—including reelection concerns (Canes-Wrone, Brady, & Cogan, 2002) and other issues (Matthews & Stimson, 1975)—such that while roll call votes may accurately reflect the legislator’s individual preference, that does not guarantee that the preference is directly attributed to the content of the issue and not competing personal and/or professional concerns. Furthermore, while the time-series collection of multiple Congresses allows for a more comprehensive picture of voting tendencies than, say, a single congressional session, there is no doubt that even this broad collection of roll call votes is still fundamentally narrow. The collection of roll call votes utilized is small, as is the total interval over which those votes are collected—such that some bias, and thus some reasonable skepticism, is needed for any overall inferences made (Mundlak, 1978).

Data Collection and Analysis

Data for Study 3 was collected and coded according to several public sources, including the roll call voting database maintained by the U.S. Congress (Congress.gov 2017), then indexed and published by Lupton (2017). Specific variables coded according to public sources beyond roll call votes included individual member characteristics like party membership, veteran/combat status, military casualties in a legislator’s district, and the presence of military installations in a member’s district, in addition to ideological variables based on Poole and Rosenthal (2000)’s original conceptualization of the DW-NOMINATE scale. Importantly, these independent conceptualizations (and variable data types) of the combat and voting preferences variables allow for new insights into the overall theory’s operation, such that they offer another important
contribution to the overall plausibility probe. However, as was the case in Study 2, several of the measures fail to yield the nuance necessary to establish strong validity and reliability in the overall testing. In particular, this study includes no specific variables or coding relative to the variety of combat scenarios experienced, nor relative to the ANS dysregulation symptomatology necessary to convincingly illustrate the transition from combat, to dysregulation, to decision-making. Instead, Study 3 progresses under the previously established assumption that combat reliably generates some dysregulation, in such a way that the simple combat variable can serve as a binary proxy variable for testing the theory’s overall hypotheses about dysregulation and decision-making.

In building a cross-sectional time-series research design, the central tool available for overall analysis was a Generalized Least Squares estimator for determining the overall relationship between veteran/combat status and shifts in defense voting behavior over the course of time. Doing so allows for the overall effect of veterans and combat service on increases/decreases in roll call voting to be assessed, alongside competing independent variables like party affiliation, district-specific variables, and more. In addition, when the data was limited to specific congressional years, individual tools were used to assess these relationships in a temporally limited context, specifically including Mann Whitney U tests comparing data across groups. The details of these selections and respective outputs are produced in Section IV.
Ethical Considerations

Unlike Studies 1 and 2, the coding from a distance and lack of explicit questionnaire design in this research analysis means that no specific ethical considerations had to be considered in the collection or analysis of the data (and thus no IRB approval was necessary for collection or analysis). Though individual Representatives were coded according to their name and district, those specific individuals were not identified in the final analyses of Section IV in order to provide some reasonable assurances of anonymity in behavior (i.e., even though this study collects no information on the specific dysregulation symptoms of members of Congress, because of the sensitive nature of the links between dysregulation, combat, and voting behavior that this theory aims to test, it is appropriate to afford the individuals studied some assurances of privacy).
Any new, comprehensive theory for explaining the wildly complex connections between military combat service, ANS dysregulation, and policy preferences is assured to require a vast amount of time and resources. Common methodologies used by each of the fields that underlie the theory presented in Section II can include self-report instruments, psychological assessments, fMRI and PET technologies, in-depth case studies and more. As such, before committing to any methodology prohibitively costly in time or resources, this research design sought to first establish the plausibility of the theory at hand.

As noted earlier in this Section, such a plausibility probe can take a lot of forms—often one of the most useful being that which undertakes a mixed methods analysis, and one that does so across several analyses (i.e., a multi-analysis). Thus, using a combination of mono/multimethod designs, this investigation specifically laid out three unique designs meant to explore the theory’s overall behavior in unique samples.

In the first design, a revolutionary survey instrument was designed as a means of capturing the diverse combat experiences, ANS dysregulation symptoms, and foreign policy preferences in one purposive sample of combat veterans. The first of its kind, this conversion mixed design explicitly collected robust qualitative data from individuals, which was then coded in order to be available for statistical empirical analysis. In linking this unique sample with diverse questions across all three variables of interest,
in addition to converting data across quantitative and qualitative methods, Study 1 provides both a broad and deep analysis of the possible operations of the theory at hand.

The second design, in contrast, reinterpreted an existing survey design and data, but in doing so allows for interesting comparisons between the newly-developed instruments of Study 1 and the more commonly known instruments of Study 2. Furthermore, particularly relative to the sampling procedures, the second study design offered two additional insights to the overall plausibility probe at hand: the powerful inference that a large random sample of veterans yields, as well as the powerful inference that a large random sample of civilians surveyed at nearly the same exact time yields. Though the Study 2 questionnaire design left much less variety than Study 1, the overall quality of the second design provides both an interesting contrast and complement to Study 1’s targeted testing of the theory at hand.

Finally, the third design introduces an entirely different monostrand design, offering a strictly quantitative analysis of a sample of veterans (combat and non-combat) in the political elite: members of the U.S. House of Representatives. Much like Study 2, Study 3’s difference in sampling frame offers a significant contribution to the overall probe of the theory’s plausibility, investigating its operation in an instance in which multiple competing pressures should serve as powerful alternative explanations to the theory at hand. At the same time, the time-series design allows for a testing of the theory’s coherence over multiple periods, adding a new unseen dimension to the theory’s overall probe.
There is no doubt that undertaking several versions of mixed methods designs over multiple analyses can appear chaotic to a typical theory test—or even a typical dissertation. However, this chaos—when rigorously controlled, as the specification throughout Section III demonstrates—is the ultimate way of illustrating any of the theory’s variation (be it expected or unexpected). By testing the theory’s viability using both brand new and reinterpreted existing data, this mixed methods multi-analysis design allows us the best possible understanding of the theory put forward in Section II—thereby allowing us to draw the most informed conclusions for the future steps in this research program.
SECTION IV
ANALYSIS AND INTERPRETATION

Following the plausibility probe methodology proposed in Section III—a mixed methods multi-analysis designed to illuminate various characteristics of the theory proposed in Section II—this Section seeks to execute and interpret analyses of each of the three individual studies proposed. As explained before, the goal of these multiple analyses is to use multiple designs and tools to best mine the proposed theory’s operations in the real world. Through the use of multiple parametric and non-parametric methods, on various purposive, random, and time-series samples, the analyses that follow seek to learn as much as possible at once about the prospects of the theory at hand, and in doing so, better build the foundation for a future research program. Based on these results, a more detailed research agenda can be planned, refined, or dismissed.

Section IV proceeds as follows: it begins with a study-by-study summary of analyses undertaken and interpretation of their results. Each study concludes with an overarching analysis of its findings and limitations. Section IV then concludes with a summary connecting lessons from across the three studies, as well as an analysis of the limitations of the plausibility probe as a whole.
SECTION IV
PART 1
Analysis and Interpretation of Study 1:
An Original Survey of Combat Veterans’ Experiences and Preferences

Data for Study 1 were collected via original online surveys administered to two battalions of Army officers (alumni of two selected ROTC programs, as detailed in Section III). The two battalions surveyed included 431 email addresses for ROTC alumni for the years 2006-2014 (Hoya Battalion) and 120 email addresses for alumni 2004-2013 (Terrapin Battalion), respectively. Of this sample population, approximately 111 email addresses returned “Failure of Delivery” notifications, for a final total sample of 440 individuals contacted. A total of 69 surveys of at least partial completion were retained and analyzed (excluded list-wise where appropriate based on completion), for a total response rate of approximately 15.6%.\footnote{As noted throughout the remainder of the manuscript, this small sample size is analyzed with due caution for the overall power of its findings.} Data was collected for each battalion over the course of three-month periods in 2014 and 2015 respectively.

Based on completed surveys the cohort of respondents was predominantly male (97.4%) and Caucasian (71.1%).\footnote{Importantly, the demographic characteristics of the sample obtained do not reflect the general gender and racial balance among ROTC graduates (Leal, 2007).} The largest group for education level was a Bachelor’s degree (34.8%), though an additional 34.2% reported Master’s degrees or other professional degrees. The sample was balanced in number of responses married and
unmarried, with almost 75% of the sample reporting no children. Among completed surveys, 15.8% of respondents reported having parents who served in the U.S. military. Importantly for the testing of the theory at hand, as expected given the target sample, almost all respondents reported that they served as commissioned officers in the U.S. Army. The vast majority of the sample (97.4%) reported deploying in support of OEF and OIF combat operations, with 52.6% of respondents reporting that they deployed to those operations two or more times. Furthermore, 10.5% reported being formally diagnosed with either PTSD or TBI, with an additional 7.9% reporting that they were unsure whether they had been formally diagnosed or not.

In the first section of the original survey, respondents reported their frequency of traumatic combat experiences; Table 1-1 provides the frequencies for each of the traumatic experience categories. The most frequently experienced combat trauma was receiving incoming artillery, rocket, or mortar fire, which almost three-quarters of respondents reported experiencing (72.5%). The next most commonly experienced traumatic combat scenarios were knowing someone seriously injured or killed (59.4%), flying in aircraft over enemy territory (56.5%), and being shot at or receiving small-arms fire.

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79 Three respondents reported currently serving in the U.S. Marine Corps and U.S. Navy.
80 Due to the small sample size, individuals were not analyzed according to which conflict they deployed to; rather, they were assessed simply based on the degree of combat experience exposure they experienced.
81 The prevalence of traumatic combat experiences may actually be higher than the rates reported here, as they included survey responses that suggested respondents may have failed to complete this section. However, without being able to determine if that inclination is accurate, all surveys to progress through this page of the online survey interface were included in the total.
TABLE 1-1. Frequencies: Traumatic Combat Experiences.

<table>
<thead>
<tr>
<th>Experience</th>
<th>N= (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I was attacked or ambushed.</td>
<td>26 (37.7)</td>
</tr>
<tr>
<td>I was shot at or received small-arms fire.</td>
<td>35 (50.7)</td>
</tr>
<tr>
<td>I saw dead bodies or human remains.</td>
<td>31 (44.9)</td>
</tr>
<tr>
<td>I saw dead or seriously injured Americans.</td>
<td>31 (44.9)</td>
</tr>
<tr>
<td>I know someone who was seriously injured or killed.</td>
<td>41 (59.4)</td>
</tr>
<tr>
<td>I received incoming artillery, rocket, or mortar fire.</td>
<td>50 (72.5)</td>
</tr>
<tr>
<td>I was responsible for the death of an enemy combatant.</td>
<td>21 (30.4)</td>
</tr>
<tr>
<td>I was responsible for the death of a noncombatant.</td>
<td>2 (2.9)</td>
</tr>
<tr>
<td>I handled or uncovered dead bodies or body parts.</td>
<td>15 (21.7)</td>
</tr>
<tr>
<td>I was wounded or injured.</td>
<td>5 (7.2)</td>
</tr>
<tr>
<td>I had a close call, was shot or hit but protective gear saved me.</td>
<td>11 (15.9)</td>
</tr>
<tr>
<td>I had buddy shot or hit who was near me.</td>
<td>8 (11.6)</td>
</tr>
<tr>
<td>I was in an accident.</td>
<td>7 (10.1)</td>
</tr>
<tr>
<td>I witnessed an accident which resulted in serious injury or death.</td>
<td>15 (21.7)</td>
</tr>
<tr>
<td>I saved the life of a soldier or civilian.</td>
<td>11 (15.9)</td>
</tr>
<tr>
<td>I engaged in hand-to-hand combat.</td>
<td>2 (2.9)</td>
</tr>
<tr>
<td>I aided in the removal of unexploded ordinances.</td>
<td>16 (23.2)</td>
</tr>
<tr>
<td>I participated in de-mining operations.</td>
<td>8 (11.6)</td>
</tr>
<tr>
<td>I patrolled or rode in areas where there were landmines.</td>
<td>27 (39.1)</td>
</tr>
<tr>
<td>I cleared or search homes/buildings.</td>
<td>17 (24.6)</td>
</tr>
<tr>
<td>I had hostile reactions from civilians I was trying to help.</td>
<td>21 (30.4)</td>
</tr>
<tr>
<td>I disarmed civilians.</td>
<td>10 (14.5)</td>
</tr>
<tr>
<td>I had contact with traumatized civilians.</td>
<td>24 (34.8)</td>
</tr>
<tr>
<td>I witnessed hostility over property or boundary disputes.</td>
<td>16 (23.2)</td>
</tr>
<tr>
<td>I witnessed hostility between warring factions.</td>
<td>23 (33.3)</td>
</tr>
<tr>
<td>I had to exercise restraint while patrolling.</td>
<td>24 (34.8)</td>
</tr>
<tr>
<td>I saw children or mothers who were victims of conflict.</td>
<td>24 (34.8)</td>
</tr>
<tr>
<td>I saw children or mothers who I was unable to help.</td>
<td>23 (33.3)</td>
</tr>
<tr>
<td>I policed or managed civilians in chaotic or unpredictable conditions.</td>
<td>23 (33.3)</td>
</tr>
<tr>
<td>I saw physical devastation.</td>
<td>32 (46.4)</td>
</tr>
<tr>
<td>I flew in an aircraft over enemy territory.</td>
<td>39 (56.5)</td>
</tr>
<tr>
<td>I encountered improvised explosive devices.</td>
<td>25 (36.2)</td>
</tr>
</tbody>
</table>

*Includes all full responses for questionnaire items 1-34 (N=69).

The least commonly reported experiences were being responsible for the death of a noncombatant (2.9%), engaging in hand-to-hand combat (2.9%), and being wounded or injured in battle (7.2%)—though note that almost 16% of the sample reported having a close call, in which they were shot/hit but saved by protective gear.
The average number of servicemembers per traumatic combat experience was approximately 22 respondents.

The average number of experiences per servicemember was approximately 9 experiences from the scale (with 50% of respondents having experienced between approximately 8 and 26 experiences). In general, some of the most frequently reported experiences were those that involved a direct threat to the life of the participant (e.g., receiving incoming fire, being ambushed, being shot at, flying over enemy territory, encountering IEDs). Directly observing/interacting with loss of life represented another significant set of responses, with up to 45% of respondents reporting that they saw or personally handled seriously injured or killed bodies/parts. Furthermore, more than a third of the sample responded in the affirmative for situations in which they were constrained or inhibited from acting in some way (e.g., having to exercise restraint while patrolling, being unable to help victims, having contact with traumatized civilians).

Thus, the findings confirm a key element for testing the first hypothesis: servicemembers responding to this original survey were reliably exposed to a number of potentially traumatizing experiences. Though overall types and frequencies of experience varied widely by servicemembers, there is no doubt that serving in combat meant experiencing at least some, if not many, traumatic experiences. Furthermore, a detailed exploration of the specific content of these experiences suggests they mimicked some of the conditions suggested to be particularly likely for motivating ANS dysregulation, including being subject to multiple traumatic experiences across
multiple deployments (i.e., the sheer frequencies of experiencing over a sample that largely deployed more than two times could suggest a disabling of the SES), as well as being in situations where individuals may cognitively override natural defense mechanisms (i.e., the frequencies of responses specifically invoking feeling a sense of restraint or inability to act potentially suggesting the inhibition of activation discharge).

Note that both in the interest of promoting survey response rates (i.e. avoiding survey fatigue) and ethically protecting the trauma reporting by respondents, this survey limited its exploration to this relatively streamlined and well-validated scale of specific deployment-related stressors. Recall from Section II, however, that the proposed number of stressors related to other phases of combat service — e.g., training and postdeployment reintegration — may be present in the sample as well. However, it also bears noting that the sample demographics — including the gender bias of 97.4% male respondents — may dramatically under-estimate existing stress and trauma exposure. After all, as noted in Section I, women experience stressor exposure like sexual harassment and assault in the military at dramatically higher levels than men, such that a more balanced gender sample might reveal greater numbers of trauma exposure. Similarly, this reporting did not seek to include prior trauma exposure like ACEs. As such, though combat introduces a specific and reliable picture of trauma exposure, it is only one of many pictures that may make up military trauma exposure.

After providing information on their total traumatic combat experiences, respondents responded to a battery of ANS symptomatology questions. Specifically, they were presented with between 11 and 22 questions specifically inquiring about the
existence and severity of the physiological, emotional, cognitive, behavioral, and spiritual symptom categories (as adapted from Heller & Heller, 2001; Stanley & Schaldach, 2011). Participants assigned a ranking (no effect on daily life, minor effect, moderate effect, major effect) to each proposed symptom, and were analyzed both according to the total number of symptoms they reported experiencing and the total severity of their symptomatology. The most frequently and severely reported symptom categories were physical and emotional symptom categories. In general, combination coding for experiencing and severity created three generalized categories of ‘low,’ ‘moderate,’ and ‘high’ ANS symptomatology (in addition to similarly-coded categories of existence/severity for each individual category of analysis).  

In the context of the plausibility probe at hand, the most important analysis of the ANS symptomatology reporting was investigating whether any relationship existed between the traumatic combat experiences collected in the earlier section and the symptomatology experienced. In order to best assess the strength of the relationship, several different methods were utilized based on differing measurements of the variables at hand. First, per the small sample size, Shapiro-Wilk testing confirmed that all of the traumatic combat experience and ANS symptomatology coded variables were not normally distributed; as a result, establishing the relationship between traumatic experiences and ANS symptomatology first relied upon a generalized cross-tabulation.

82 Specifically, the ‘low’ ANS category indicated very few major effects and/or many non-existent-to-minor symptoms; the ‘moderate’ category indicated a moderate number of major effects and/or a large number of minor-to-moderate effects; and the ‘high’ category included many major effects and/or many moderate-to-major effects.
evaluating the pattern between two categorical variables: symptom severity and total number of traumatic combat scenarios experienced. Using Kendall’s tau-b measure of association to evaluate the strength of the relationship in the cross-tabulation, the results are printed in Table 1-2 using column frequency percentages, and show several interesting outcomes.

First and foremost, the vast majority of individuals with three or fewer traumatic experiences (76%) reported overall symptomatology that classified them as experiencing a ‘low’ degree of overall ANS dysregulation. In contrast, among those reporting 13 or more traumatic combat experiences, more than 95% of the sample respondents reported the presence and severity of ANS dysregulation symptoms that placed them within the moderate to high categories of dysregulation. The relationship is significant at the p<.001 level.

Though this finding—that there is a clear positive relationship between traumatic combat experiences and dysregulation symptomatology—is interesting, there is no doubt that it provides little more than a good initial indicator of the relationship of interest. In other words, while it offers a confirmatory direction for the rest of the investigation and hypothesis testing at hand, much of the individual nuance of the symptoms themselves is lost in this generalized calculation of two categorical variables—instead, a more nuanced rank-based non-parametric test of significance that allows for greater variation in symptomatology may provide more revolutionary and interesting information for understanding the relationship between trauma and symptoms. A Kruskal Wallis H test provides this level of nuance, comparing multiple
categories of traumatic experiences (defined as three categories: 0-3 experiences; 4-12 experiences; or 13 or more experiences) across the interval-level (i.e., no longer binned) evaluation of overall symptom severity. Importantly, in addition to (satisfied) assumptions about variable types, the Kruskal Wallis H test requires a subjective study design assessment of independence of observations—and though there is no theoretical reason to believe that a dependent relationship exists between symptom clusters (i.e., there is no reason to suspect that specific values on emotional restlessness should produce specific values on uncontrolled behavioral rage), because all five categories are still developing in our understanding, an abundance of caution suggests at least separating the symptom clusters in the overall models. This outcome is produced in Table 1-3.

The results tell an interesting story—specifically, the Kruskal Wallis H test suggests that there is a statistically significant difference between physical symptom
TABLE 1-3. Categories of Traumatic Combat Experiences and Categories of ANS Symptoms Severity.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8.677* (.013)</td>
<td>3.876 (.144)</td>
<td>2.068 (.356)</td>
<td>3.143 (.208)</td>
<td>.211 (.900)</td>
</tr>
</tbody>
</table>

N = 44
*p-values in parentheses; ***p<.001; **p<.01; *p<.05; ‡p<.1

severity and number of traumatic combat scenarios experienced (at the p<.05 level). This demonstrates that as the number of traumas experienced increases, so too does the severity of physical symptoms reported. None of the alternative symptom categories initially demonstrate significance.

As such, a third layer of investigation—one comparing both interval-level assessments of combat experiences and interval-level assessments of severity of individual symptom clusters—might yield another interesting assessment of the overall theory at hand. Using a Spearman’s non-parametric correlation for these two variables

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83 This echoes the existing research showing that individuals are more likely to report somatic complaints than other complaints (Killgore et al. 2006). As such, it bears noting that it may also subtly reinforce the power that social stigma plays both in how individuals respond to surveys about their post-combat symptomatology, as considered in Section III; the number of physical symptoms may not necessarily be experienced at statistically significant levels, but rather are simply reported at such levels because they are less threatening to the institutionally-cultivated masculine identity.
yields the output shown in Table 1-4. Most noticeable is that at this additional level of measurement precision, a second symptomatology cluster—the behavioral symptoms—show a positive and significant (p<.1) relationship between overall symptom severity and number of traumatic combat experiences.

In sum, the basic results of these three tests give us a number of initial insights about the relationship for H1. The first assessment demonstrated that a general positive (and significant) correlation between overall traumatic combat exposure and overall ANS symptom severity does exist. The second findings introduced an initial deep-dive into these findings, by assessing how the categories of overall combat trauma exposure matched up with symptoms across each of the individual symptomatology categories, finding that combat trauma seemed to have the greatest effect on overall physical symptoms of dysregulation. Finally, the third findings built on this assessment of significance to compare the full scale of traumatic combat experiences to the full scale of each category of ANS symptomatology—finding that at this ultimate level of

\[ \text{TABLE 1-4. Continuous Traumatic Combat Experiences and Categories of ANS Symptoms Severity.} \]

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>[0.380** (.007)]</td>
<td>[0.234 (.109)]</td>
<td>[0.151 (.316)]</td>
<td>[0.268‡ (.075)]</td>
<td>[0.052 (.739)]</td>
<td></td>
</tr>
</tbody>
</table>

N = 44

*p-values in parentheses; ***p<.001; **p<.01; *p<.05; ‡p<.1

Furthermore, recall that this powerful effect exists with data that, upon visual inspection of the responses, may have been underreported.
measurement precision, increases in traumatic combat exposure resulted in significant positive associations with physical and behavioral (and with a relaxation of the alpha level, emotional) symptoms.

These findings contribute several essential elements to the overall plausibility probe. First is that they provide a sense of the depth of the relationship between traumatic experience exposure in combat and overall ANS symptomatology by showing clear relationships of varying degrees of significance between traumatic combat experiences and dysregulation symptoms. Granted, there is not enough of an effect happening such that we can definitively conclude that an increase in traumatic experience exposure reliably leads to the existence of powerful ANS dysregulation—but in a way, even that finding provides an essential contribution to testing the theory’s plausibility by demonstrating just how complex, and perhaps difficult to assess, the relationship between these factors is. In other words, by hovering around significance across both the most generalized and most specific analyses, these tests simultaneously show that there is certainly some unique relationship happening—but that its mechanisms are neither simple nor straightforward, and may in fact require the elaborate and costly testing measures in order to better untangle the individual strands of influence.

These findings also offer interesting insights into the type of relationship that exists in the theory being probed. The symptoms evaluated in the context of traumatic experiences continue to yield evidence in favor of H1’s generalized claims about dysregulation, but by investigating and analyzing different kinds of symptoms, these
studies offer our first insight into the unique behavior of dysregulation. Specific symptom clusters hold unique relationships with overall combat trauma experiencing; in other words, traumatic combat experiences reliably yield some different types, and different depths, of ANS dysregulation.

Indeed, even beyond learning that the relationship between combat trauma and ANS dysregulation symptoms varies in depth and by symptom type, these findings provide a somewhat hidden lesson relative to the understanding of Section II’s overall theory based on which symptom types were significant. Specifically, the three symptomatology categories emerging as significantly associated with traumatic combat exposure are primarily affective/limbic-mediated symptoms. Thus as individuals experienced greater numbers of traumatic combat experiences in their deployments, they reported more severe deleterious shifts in symptoms that reflect the behavior of the survival brain, not the thinking brain. Indeed, no significant or noticeable shift occurred in either cognitive or spiritual symptomatology (indeed, spiritual symptoms showed an almost entirely absent relationship with increases in trauma exposure). In other words, though these analyses only sought to establish whether H1 operated as expected (as it did), they actually ended up contributing to the test of H2A by possibly demonstrating the amplification of activity in the brain centers that moderate physical/behavioral/emotional responses, as well as no noticeable activity in the brain centers that moderate cognitive/spiritual responses.85 In this way, even straightforward

85 Granted, it could be argued that H2A predicts a significant relationship between trauma exposure and cognitively-mediated symptoms, in that thinking brain
correlational tests suggested that System 1 decision-making may indeed powerfully overtake System 2 decision-making after traumatic combat experiences.

Given these unique—if limited by the small sample size—findings, the next essential step to better probing the behavior of the theory under investigation is to apply the lessons learned to individuals’ overall foreign policy preferences, to assess the way (and depth to which) ANS dysregulation actually predicts the preferences of individuals. In order to determine whether combat trauma may ultimately and reliably guide foreign policy preferences, the existing coded measures of overall ANS dysregulation symptomology were compared to respondents’ attitudes on a number of hypothetical foreign policy issues. Specifically, according to responses on roughly 18 individual questions assessing how respondents would react regarding hypothetical issues in international affairs, a composite coded average response score of foreign policy attitudes was calculated (such that individuals were assigned incremental scores according to their level of aggressiveness, neutrality, or cooperativeness).

degradation should be as powerfully noticed alongside survival brain amplification. However, a distinct lesson may be revealed in the observed insignificance of the relationship: degraded cognitive abilities may make recognizing and identifying degraded cognitive abilities harder to do. In other words, a servicemember with dysregulation may be able to over-sense a survival brain shift in restlessness (because of the hypothesized increase in survival brain activity), and may under-sense a thinking brain shift in poor memory (because of the hypothesized decrease in thinking brain activity). This phenomenon is seen in some of the sleep deprivation literature: whereas short sleep duration leads to objective worsening in cognitive performance, the subjective assessment of subjects is that the cognitive performance remains satisfactory (see Stanley, in press).
Importantly, these analyses of the relationship between ANS dysregulation and foreign policy preferences proceed under the assumption that generalized ANS dysregulation symptoms serve as an accurate proxy for traumatic combat experiences (given the generalized significance obtained by the models assessing total traumatic experiences and overall symptom severity). In this way, even just using ANS symptom severity and the foreign policy scale, these analyses can reliably represent a full probing of the model from H1 to H2B (e.g., an examination of the relationship between traumatic combat experiences, subsequent ANS dysregulation, and subsequent foreign policy preferences). However, additional analyses probe the relationship between specific symptom categories and foreign policy preferences, not all of which reliably showed a relationship with traumatic combat experiences. Thus, some analyses still investigate the overall relationship between H1 and H2B, while others specifically test the relationship solely between H2A and H2B (e.g., symptom categories for particularly cognitive and spiritual clusters only examine the relationship between dysregulation and foreign policy preferences). These multitudinous tests are both appropriate and important for establishing the working dynamics of these multiple interrelated independent and dependent variables.

Shapiro-Wilk testing of the foreign policy attitudes composite variable demonstrated that respondents were approximately normal in their overall distribution on the cooperative-to-aggressive foreign policy scale, allowing for the cautious introduction of a number of parametric statistical methods. For instance, a bivariate regression analysis could be used to assess the relationship between the total severity of
TABLE 1-5. Severity of ANS Symptoms and Foreign Policy Preferences.

<table>
<thead>
<tr>
<th></th>
<th>FP Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANS Severity</td>
<td>-.001</td>
</tr>
<tr>
<td></td>
<td>(.693)</td>
</tr>
<tr>
<td>Constant</td>
<td>3.366***</td>
</tr>
<tr>
<td></td>
<td>(.000)</td>
</tr>
<tr>
<td>R-squared</td>
<td>.004</td>
</tr>
<tr>
<td>F</td>
<td>.158</td>
</tr>
<tr>
<td></td>
<td>(.693)</td>
</tr>
</tbody>
</table>

N = 42
p-values in parentheses; ***p<.001; **p<.01; *p<.05; ‡p<.1

ANS symptoms and individuals’ total scores on the aggressive/cooperative policy composite variable—an assessment reprinted in Table 1-5.

Clearly, general dysregulation symptomatology indicated a miniscule overall decline in foreign policy scales (perhaps indicating a slightly more neutral/cooperative tone), though findings failed to obtain any statistical significance. Indeed, when additional bivariate regression models were implemented evaluating the effect of ANS dysregulation symptoms by symptom type on overall foreign policy behavior, as shown in Table 1-6, these assessments also failed to demonstrate any powerful explanatory relationship.

At this stage in the plausibility probe, the transition from H1 to H2A/H2B appears to be a demonstrably tenuous link; whereas experiences and reactions seemed to have an intriguing and partially significant relationship, little to no information emerges from the investigation between symptoms and generalized attitudes. Indeed,
### TABLE 1-6. Severity of Individual ANS Symptom Clusters and Foreign Policy Preferences.

<table>
<thead>
<tr>
<th>FP Model</th>
<th>FP Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANS Severity: Physical</td>
<td>ANS Severity: Emotional</td>
</tr>
<tr>
<td>-.002</td>
<td>-.001</td>
</tr>
<tr>
<td>(.827)</td>
<td>(.892)</td>
</tr>
<tr>
<td>Constant</td>
<td>Constant</td>
</tr>
<tr>
<td>3.312***</td>
<td>3.283***</td>
</tr>
<tr>
<td>(.000)</td>
<td>(.000)</td>
</tr>
<tr>
<td>R-squared</td>
<td>R-squared</td>
</tr>
<tr>
<td>.034</td>
<td>.000</td>
</tr>
<tr>
<td>F Statistic</td>
<td>F Statistic</td>
</tr>
<tr>
<td>.048</td>
<td>.019</td>
</tr>
<tr>
<td>(.827)</td>
<td>(.892)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FP Model</th>
<th>FP Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANS Severity: Cognitive</td>
<td>ANS Severity: Behavioral</td>
</tr>
<tr>
<td>-.006</td>
<td>-.019</td>
</tr>
<tr>
<td>(.638)</td>
<td>(.290)</td>
</tr>
<tr>
<td>Constant</td>
<td>Constant</td>
</tr>
<tr>
<td>3.382***</td>
<td>3.634***</td>
</tr>
<tr>
<td>(.000)</td>
<td>(.000)</td>
</tr>
<tr>
<td>R-squared</td>
<td>R-squared</td>
</tr>
<tr>
<td>.005</td>
<td>.027</td>
</tr>
<tr>
<td>F Statistic</td>
<td>F Statistic</td>
</tr>
<tr>
<td>.225</td>
<td>1.147</td>
</tr>
<tr>
<td>(.638)</td>
<td>(.290)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FP Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANS Severity: Spiritual</td>
</tr>
<tr>
<td>-.003</td>
</tr>
<tr>
<td>(.741)</td>
</tr>
<tr>
<td>Constant</td>
</tr>
<tr>
<td>3.322***</td>
</tr>
<tr>
<td>(.000)</td>
</tr>
<tr>
<td>R-squared</td>
</tr>
<tr>
<td>.003</td>
</tr>
<tr>
<td>F Statistic</td>
</tr>
<tr>
<td>.111</td>
</tr>
<tr>
<td>(.741)</td>
</tr>
</tbody>
</table>

N = 42

*p-values in parentheses; ***p<.001; **p<.01; *p<.05; ‡p<.1

even when considered together in a multivariate model, none of the symptom severity clusters showed any significant relationship with overall foreign policy attitudes as
specified or any overall explanatory strength.\textsuperscript{86} Even a ‘reduced cluster’ model—i.e., a model that only evaluated the symptom clusters that were reliably predicted by traumatic combat experiences, such that the reduced cluster model shows the true relationship from combat, to ANS dysregulation, to foreign policy attitudes—showed no significant relationships. Indeed, the only revelation to come from the reduced cluster model is that dropping the insignificant cognitive and spiritual clusters led to no demonstrable change in the model’s overall R-squared value, suggesting the near-absent impact of these symptoms on overall attitudes. These findings are shown in Table 1-7.

The collective findings of a brief parametric analysis of dysregulation symptom severity and foreign policy attitudes suggests little to no further analysis is warranted—the data as-is simply yields none of the interesting patterns necessary to believe there is any relationship between ANS symptom severity and policy preferences among the respondents. However, small and insignificant movements within the models over time, specifically when separated by symptom cluster, suggest there still may be some unique pattern at hand that is being distorted by the analysis in its current manifestation. Indeed, in the interest of fully probing the theory’s plausibility, a number of adjustments can be made within the variable measurements to shed additional, if skeptical, light on the plausibility of the hypotheses at hand.

In particular, though the foreign policy attitudes composite score’s normal distribution suggests it represents a strong continuous dependent variable for

\textsuperscript{86} Note that none of the symptoms showed multicollinearity in the model, providing additional evidence as to their independence.
### TABLE 1-7. Severity of Collected ANS Symptom Clusters and Foreign Policy Preferences.

<table>
<thead>
<tr>
<th></th>
<th>All Cluster FP Model</th>
<th>Reduced Cluster FP Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Symptoms</td>
<td>.002 (.887)</td>
<td>.002 (.864)</td>
</tr>
<tr>
<td>Emotional Symptoms</td>
<td>.013 (.522)</td>
<td>.013 (.341)</td>
</tr>
<tr>
<td>Cognitive Symptoms</td>
<td>.001 (.966)</td>
<td></td>
</tr>
<tr>
<td>Behavioral Symptoms</td>
<td>-.046 (.172)</td>
<td>-.045 (.128)</td>
</tr>
<tr>
<td>Spiritual Symptoms</td>
<td>.001 (.969)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>3.742*** (.000)</td>
<td>3.739*** (.000)</td>
</tr>
<tr>
<td>R-squared</td>
<td>.059</td>
<td>.059</td>
</tr>
<tr>
<td>F Statistic</td>
<td>.468 (.797)</td>
<td>.821 (.490)</td>
</tr>
</tbody>
</table>

N = 42  
*p-values in parentheses; ***p<.001; **p<.01; *p<.05; ‡p<.1

Parametric analysis, the explanatory power of the symptoms may be diluted by the number and type of symptoms within each category. In such a scenario, a Principal Components Analysis (PCA)—an analysis in which multiple independent variables within a similar cluster are compared and evaluated based on their correlational similarity, such that condensed ‘factors’ of association within clusters can be determined—may yield the streamlined independent variables necessary for a more informative regression analysis. Thus, a PCA was employed for each of the dysregulation symptom clusters to determine how many condensed representative factors might exist within the broad symptom categories—yielding important
additional information relative to understanding dysregulation as a whole, in addition to potentially yielding more robust independent variables for the analysis of impact on foreign policy attitudes.

A total of five analyses were run using PCA, on a total of 98 symptom questions from the Study 1 questionnaire. Specifically, one PCA was used for each of the five distinct ANS symptomatology questionnaires: the physical/physiological symptom questionnaire (which assessed 22 items); the emotional symptom questionnaire (which assessed 18 items); the cognitive symptom questionnaire (which assessed 22 items); the behavioral symptom questionnaire (which assessed 17 items); and the spiritual symptom questionnaire (which assessed 19 items).

Probing a PCA for suitability and subsequent implementation takes place over the course of several stages. First, each symptom collection’s correlation matrix was inspected to evaluate whether variables maintained correlation coefficients greater than approximately $r=0.3$ (assuring some connection across all of the symptoms in a category). Next, the sampling adequacies of the collections were evaluated according to their Kaiser-Meyer-Olkin (KMO) scores, an evaluation of the linear relationships within the data (in which values above roughly 0.6 are considered satisfactory, increasing in quality) (Kaiser, 1974). Each collection of symptoms with high enough KMO scores was

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87 Note that using PCA on the full set of symptomatology questions—treated as one whole collection rather than five individual ones—is another viable option for future symptomatology investigations. For the purposes of this dissertation’s plausibility probe, it was deemed appropriate to keep as many individually loaded factors as possible to learn more about each independent symptomatology category.
then assessed according to Barlett’s test of sphericity, a hypothesis test of the
correlations contained within the correlation matrix which, when appropriately
statistically significant (p<.05), shows the data is anticipated to be factorizable (i.e., there
are common correlational factors that can be extracted from the large set of
instruments).

Finally, drawing upon these analyses and inspecting the relevant outputs, the
number of components to retain for each symptom collection was determined according
to a combination of the Eigenvalue-one criterion (wherein an eigenvalue less than one
indicates that a component explains less variance than an individual variable would
and thus should not be retained) (Kaiser, 1960), the proportion of the total variance
accounted for (wherein components are retained so long as they collectively explain up
to 60% to 70% of total variance), and an inspection of the symptom-respective scree plot
(wherein changes in inflection points demonstrate the substantive benefits of including
each additional factor). Note that this subjective determination within PCA analysis is
set by the researcher, according to the investigation’s overall research goals; given that I
seek to explore as much as possible about the influences and relationships among the
different ANS symptomatology collections, I thus sought to retain even small factors so
long as they still provided valuable contributions to explaining symptom clusters’
overall variance (Laerd Statistics, 2015). Brief explanations of the findings within each of
these stages—as well as the relevant outputs for each of these stages of PCA—follow,
according to each symptom collection.
For physical symptoms of ANS dysregulation (N=22), all correlations were inspected to ensure they achieved the default $r=0.3$ correlation (the Nausea/Vomiting symptom was omitted due to lack of responses). All other variables achieved the correlation necessary, thus allowing for the calculation of sampling adequacy via the KMO score. Though the physical symptom cluster did hold 3-4 variables that, on their own, reflected low (i.e. KMO<0.5) scores, the overall KMO measure for the model achieved the necessary baseline for the sample (KMO=0.605). Barlett’s test of sphericity was used to assess whether there are any correlations produced within the KMO score-produced correlation matrix to ensure there were factors for reduction, and achieved a p-value of $p<0.0005$ such that the PCA null hypothesis (no relationship among symptoms) was rejected and specific factors were extracted.

As noted above, the specific factors extracted were determined according to three general criteria (the Eigenvalue-one criterion, total proportion of variance explained, and scree plot inspection). Table 1-8 shows the total variance explained for the physical symptoms, ultimately revealing a total of six common components or ‘factors’ within the total physical symptomatology that were extracted and retained for analysis. These components were then rotated according to Varimax orthogonal rotation (to aid in interpretability), with the resultant major loadings for each symptom on each factor reflected in the Rotated Component Matrix produced in Table 1-9. The PCA for physical symptoms...

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88 Indeed, in the interest of gleaning as much information for the plausibility probe as possible in this particular analysis, even the factors with individually low KMO scores were retained.
TABLE 1-8. Total Variance Explained, Components for PCA: Physical Symptoms.

<table>
<thead>
<tr>
<th>Component</th>
<th>Total</th>
<th>% of Variance</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.668</td>
<td>31.754</td>
<td>31.754</td>
</tr>
<tr>
<td>2</td>
<td>2.713</td>
<td>12.917</td>
<td>44.671</td>
</tr>
<tr>
<td>3</td>
<td>1.931</td>
<td>9.195</td>
<td>53.886</td>
</tr>
<tr>
<td>4</td>
<td>1.597</td>
<td>7.604</td>
<td>61.471</td>
</tr>
<tr>
<td>5</td>
<td>1.425</td>
<td>6.787</td>
<td>68.257</td>
</tr>
<tr>
<td>6</td>
<td>1.016</td>
<td>4.837</td>
<td>73.094</td>
</tr>
</tbody>
</table>

Symptoms shows that respondents’ symptoms commonly accumulated according to six common ‘factors’ of physical symptoms.\textsuperscript{89} Common Factor 1 included major loadings for shakiness; feeling as if your life is in danger; over-eating; feeling weak in your body; and feeling a heightened sense of urgency. Factor 2 included major loadings for increased urinary frequency; having too much energy; restlessness; loss of sexual interest; and feeling violated or unsafe. Factor 3 included major loadings for under-eating; overcharged feeling in your body; heart pounding/racing; and upset/knotted stomach. Factor 4 included major loadings for lethargy and/or chronic fatigue; oversleeping; chronic pain; and insomnia. Factor 5 included major loadings for hypervigilance/feeling on guard and feeling your life is still threatened. Finally, Factor

\textsuperscript{89} Defining the specific themes within each set of extracted components that lead to their coalescence around major factor loadings is beyond the scope of this dissertation—for example, doing so would require an in-depth analysis of what commonalities ‘shakiness’ and ‘feeling weak in your body’ share that make them a defining physical factor, as well as an analysis of what it is about the commonalities within that factor that differentiate it from the factor derived from the commonalities among having too much energy, having an overcharged feeling in your body, and oversensitivity to light or sound. However, a fruitful future research area exists in defining and assessing the commonalities across symptoms with major factor loadings, in order to better grasp and define their complex interactions.
### TABLE 1-9. Rotated Component Matrix for PCA: Physical Symptoms (Varimax Rotation of 6-component questionnaire)

<table>
<thead>
<tr>
<th>Original Items</th>
<th>Rotated Component Coefficients</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Shakiness</td>
<td>.779</td>
<td>.158</td>
</tr>
<tr>
<td>Feeling your life is in danger</td>
<td>.721</td>
<td>-.011</td>
</tr>
<tr>
<td>Over-eating</td>
<td>.669</td>
<td>-.162</td>
</tr>
<tr>
<td>Feeling weak in your body</td>
<td>.660</td>
<td>.055</td>
</tr>
<tr>
<td>Feeling a heightened sense of urgency</td>
<td>.619</td>
<td>.509</td>
</tr>
<tr>
<td>Increased urinary frequency</td>
<td>.052</td>
<td>.886</td>
</tr>
<tr>
<td>Having too much energy</td>
<td>.018</td>
<td>.783</td>
</tr>
<tr>
<td>Restlessness</td>
<td>.353</td>
<td>.684</td>
</tr>
<tr>
<td>Loss of sexual interest</td>
<td>-.041</td>
<td>.651</td>
</tr>
<tr>
<td>Feeling violated or unsafe</td>
<td>-.120</td>
<td>.560</td>
</tr>
<tr>
<td>Under-eating</td>
<td>.044</td>
<td>.060</td>
</tr>
<tr>
<td>Overcharged feeling in your body</td>
<td>.199</td>
<td>.145</td>
</tr>
<tr>
<td>Heart pounding/racing</td>
<td>.366</td>
<td>.139</td>
</tr>
<tr>
<td>Upset/knotted stomach</td>
<td>.326</td>
<td>.043</td>
</tr>
<tr>
<td>Lethargy and/or chronic fatigue</td>
<td>.041</td>
<td>.003</td>
</tr>
<tr>
<td>Oversleeping</td>
<td>.105</td>
<td>.209</td>
</tr>
<tr>
<td>Chronic pain</td>
<td>.413</td>
<td>-.045</td>
</tr>
<tr>
<td>Insomnia</td>
<td>.429</td>
<td>.309</td>
</tr>
<tr>
<td>Hypervigilance/feeling on guard</td>
<td>.238</td>
<td>.199</td>
</tr>
<tr>
<td>Feeling your life is still threatened</td>
<td>-.044</td>
<td>-.100</td>
</tr>
<tr>
<td>Hypersensitivity to light/sound</td>
<td>.000</td>
<td>.199</td>
</tr>
</tbody>
</table>

*Note: Major loadings for each item are bolded.*
6 included a major loading for hypersensitivity to light/sound. Having extracted these six factors, individual respondents were then assessed composite scores for how much of a particular extracted PCA score that they achieved—allowing future analyses to use much more precise measures of physical symptoms as independent variables.

For the emotional symptoms of ANS dysregulation (N=18), an inspection of the correlations among each of the symptoms shows that all symptoms achieved at least a correlation of r=0.3, such that the PCA could proceed to check sampling adequacy. In this instance, no individual symptoms obtained a KMO score less than the generally accepted 0.5 level, and ultimately the entire collective emotional symptomatology achieved a KMO>0.8—indicating that PCA is an appropriate technique for streamlining the overall model of emotional symptoms. A check of Barlett’s test of sphericity shows p<.0005, meaning once again that the null hypothesis of no relationship between individual emotional symptoms could be rejected and specific factors extracted.

Much like the physical symptoms, emotional factors were extracted according to the Eigenvalue-one criterion, the total proportion of variance explained by the factors, and scree plots for the respective factors. A total of five emotional factors were extracted according to these standards (as shown in Table 1-10), which were then rotated per the Varimax orthogonal rotation and reprinted in Table 1-11 to show how each symptom loaded on each factor. Factor 1 included major loadings for panic attacks; extreme emotional shifts; fear of being with others; fear of being alone; inability to cope with normal stresses; emotional flooding; impulses to run away/escape fantasies; and depression. Factor 2 included major loadings for feeling overwhelmed; feeling out of
TABLE 1-10. Total Variance Explained, Components for PCA: Emotional Symptoms.

<table>
<thead>
<tr>
<th>Component</th>
<th>Total</th>
<th>% of Variance</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9.498</td>
<td>45.228</td>
<td>45.228</td>
</tr>
<tr>
<td>2</td>
<td>2.177</td>
<td>10.365</td>
<td>55.593</td>
</tr>
<tr>
<td>3</td>
<td>1.592</td>
<td>7.582</td>
<td>63.175</td>
</tr>
<tr>
<td>4</td>
<td>1.328</td>
<td>6.323</td>
<td>69.498</td>
</tr>
<tr>
<td>5</td>
<td>1.221</td>
<td>5.816</td>
<td>75.315</td>
</tr>
</tbody>
</table>

control; and feeling anxious. Factor 3 included major loadings for having an “everything’s fine” stance; fearlessness of dangerous situations; difficulty connecting to others; isolation from people; and sudden fearfulness for no reason. Factor 4 included major loadings for rage or anger outbursts; uncontrolled temper; generalized fear/anger; and irritability/overreacting. Finally, Factor 5 included a major loading for startling easily. In total, it is clear that five powerful themes emerge such that this set, rather than the original multiple measures of emotional symptoms, might yield more accurate and informative interpretations of the impact of emotional dysregulation on policy preferences.

An initial inspection of the correlations among cognitive symptoms (N=22) found one symptom (Little or no awareness of choices) that could be omitted due to lack of responses; otherwise, all variables achieved the r=0.3 relationship required to reasonably proceed with PCA processes. When checking the sampling adequacy of the cognitive symptom set, only one individual factor showed KMO<0.5; more importantly, the entire collective set reflected a KMO score that was once again greater than 0.8, signaling how appropriate PCA is for this set. The subsequent Barlett’s test of sphericity
TABLE 1-11. Rotated Component Matrix for PCA: Emotional Symptoms
(Varimax Rotation of 5-component questionnaire).

<table>
<thead>
<tr>
<th>Original Items</th>
<th>Rotated Component Coefficients</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Panic attacks</td>
<td>.908</td>
<td>.123</td>
</tr>
<tr>
<td>Extreme emotional shifts</td>
<td>.849</td>
<td>.2459</td>
</tr>
<tr>
<td>Fear of being with others</td>
<td>.843</td>
<td>.261</td>
</tr>
<tr>
<td>Fear of being alone</td>
<td>.838</td>
<td>-1.20</td>
</tr>
<tr>
<td>Inability to cope with normal stresses</td>
<td>.797</td>
<td>.473</td>
</tr>
<tr>
<td>Emotional flooding</td>
<td>.765</td>
<td>.182</td>
</tr>
<tr>
<td>Impulses to run away/escape fantasies</td>
<td>.751</td>
<td>.128</td>
</tr>
<tr>
<td>Depression</td>
<td>.594</td>
<td>.472</td>
</tr>
<tr>
<td>Feeling overwhelmed</td>
<td>.158</td>
<td>.820</td>
</tr>
<tr>
<td>Feeling out of control</td>
<td>.178</td>
<td>.795</td>
</tr>
<tr>
<td>Feeling anxious</td>
<td>.326</td>
<td>.527</td>
</tr>
<tr>
<td>“Everything’s fine” stance</td>
<td>.085</td>
<td>-.007</td>
</tr>
<tr>
<td>Fearlessness of dangerous situations</td>
<td>.293</td>
<td>.095</td>
</tr>
<tr>
<td>Difficulty connecting to others</td>
<td>.241</td>
<td>.372</td>
</tr>
<tr>
<td>Isolation from people</td>
<td>.216</td>
<td>.510</td>
</tr>
<tr>
<td>Sudden fearfulness for no reason</td>
<td>.476</td>
<td>.186</td>
</tr>
<tr>
<td>Rage or anger outbursts</td>
<td>-.021</td>
<td>.189</td>
</tr>
<tr>
<td>Uncontrolled temper</td>
<td>.138</td>
<td>.259</td>
</tr>
<tr>
<td>Generalized fear /anger</td>
<td>.376</td>
<td>-.017</td>
</tr>
<tr>
<td>Irritability/overreacting</td>
<td>.252</td>
<td>.293</td>
</tr>
<tr>
<td>Startling easily</td>
<td>.138</td>
<td>.074</td>
</tr>
</tbody>
</table>

Note: Major loadings for each item are bolded.

was significant (p<.0005), meaning there were assurances of a complex relationship among the multiple cognitive symptoms — such that a PCA process and rotation was not just appropriate, but arguably, necessary.
**TABLE 1-12. Total Variance Explained, Components for PCA: Cognitive Symptoms.**

<table>
<thead>
<tr>
<th>Component</th>
<th>Total</th>
<th>% of Variance</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7.144</td>
<td>42.024</td>
<td>42.024</td>
</tr>
<tr>
<td>2</td>
<td>2.706</td>
<td>15.917</td>
<td>57.941</td>
</tr>
<tr>
<td>3</td>
<td>1.692</td>
<td>9.955</td>
<td>67.896</td>
</tr>
<tr>
<td>4</td>
<td>1.548</td>
<td>9.106</td>
<td>77.002</td>
</tr>
</tbody>
</table>

**TABLE 1-13. Rotated Component Matrix for PCA: Cognitive Symptoms (Varimax Rotation of 4-component questionnaire)**

<table>
<thead>
<tr>
<th>Original Items</th>
<th>Rotated Component Coefficients</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Recurring dreams related to traumatic events</td>
<td>.961</td>
<td>.045</td>
</tr>
<tr>
<td>Intrusive imagery</td>
<td>.902</td>
<td>.169</td>
</tr>
<tr>
<td>Obsessive thinking</td>
<td>.868</td>
<td>.134</td>
</tr>
<tr>
<td>Obsessive review</td>
<td>.849</td>
<td>.134</td>
</tr>
<tr>
<td>Night terrors or abrupt awakening</td>
<td>.829</td>
<td>.124</td>
</tr>
<tr>
<td>Flashbacks that make you feel like you are reliving trauma</td>
<td>.716</td>
<td>.076</td>
</tr>
<tr>
<td>Overcautiousness</td>
<td>.671</td>
<td>.254</td>
</tr>
<tr>
<td>Dread or anticipation</td>
<td>.619</td>
<td>.604</td>
</tr>
<tr>
<td>Lack of focus/concentration</td>
<td>.035</td>
<td>.932</td>
</tr>
<tr>
<td>Difficulty making decisions</td>
<td>.081</td>
<td>.737</td>
</tr>
<tr>
<td>Being easily distracted</td>
<td>.420</td>
<td>.690</td>
</tr>
<tr>
<td>Everything seeming burdensome/daunting</td>
<td>.334</td>
<td>.681</td>
</tr>
<tr>
<td>Disorientation</td>
<td>.049</td>
<td>-.059</td>
</tr>
<tr>
<td>Feeling confused</td>
<td>-.058</td>
<td>.142</td>
</tr>
<tr>
<td>Excessive worrying</td>
<td>.189</td>
<td>.238</td>
</tr>
<tr>
<td>Gaps in memory</td>
<td>.150</td>
<td>.259</td>
</tr>
<tr>
<td>Not remembering</td>
<td>.419</td>
<td>-.035</td>
</tr>
</tbody>
</table>

*Note: Major loadings for each item are bolded.*
Once again, factors were extracted according to the standard Eigenvalue-one, proportion of variance, and scree plot criteria. From the cognitive symptom PCA, a total of four factors were extracted—meaning four components accurately and powerfully represented the essence of the 22 total instruments (as shown in Table 1-12). After employing a Varimax orthogonal rotation to ease interpretability of the measures, the total loading for each symptom on each factor is reflected in Table 1-13. Factor 1 included major loadings for recurring dreams related to traumatic events; intrusive imagery; obsessive thinking; obsessive review; night terrors or abrupt awakening; flashbacks that make you feel like you are reliving trauma; overcautiousness; and dread or anticipation. Factor 2 included major loadings for lack of focus/concentration; difficulty making decisions; being easily distracted; and everything seeming burdensome/daunting. Factor 3 included major loadings for disorientation; feeling confused; and excessive worrying. Finally, Factor 4 included major loadings for gaps in memory and not remembering. Perhaps more so than any other PCA, the cognitive symptoms show the power of this particular form of analysis; four collective but distinct elements clearly underlie cognitive ANS dysregulation, such that they could be extracted and now used as meaningful independent variables for assessing overall foreign policy preferences.

The PCA processes were next applied to the behavioral symptomatology cluster (N=17), which once again found one symptom correlation that failed to achieve the field standard r=0.3 to be appropriate for PCA (screaming/hitting/kicking; this variable was thus omitted from the analysis). However, the assessment of the sampling adequacy via
KMO score found more skeptical associations than prior symptom clusters; in addition to three factors that individually failed to satisfy KMO values greater than 0.5, the total model failed to achieve the default KMO>0.6 that signals PCA as a particularly appropriate method of analysis. However, because so many factors did achieve the necessary KMO scores, and because the model obtained KMO=0.558, it was determined that the analysis would proceed. A Barlett’s test of sphericity found that p<.0005 for this sample, confirming the appropriateness of the methodology even for the questionable KMO score.

Per the standard methodology, behavioral factors were extracted according to the Eigenvalue-one, proportion of total variance explained, and scree plot criteria. As shown in Table 1-14, a total of six general factors emerged, suggesting that behavioral symptoms coalesce around six unique poles that capture the symptoms’ variation. The Varimax orthogonal rotation and symptom loading per factor is provided in Table 1-15. Factor 1 included major loadings for desire to hurt self/others; avoidance of triggers; disrupted relationships; trouble orienting in space; and starting many projects and not completing them. Factor 2 included major loadings for losing personal items and prone to accidents. Factor 3 included major loadings for difficulty starting projects and loss of creativity. Factor 4 included major loadings for fear of leaving home and trouble keeping track of time. Factor 5 included major loadings for loss of sexual interest; bonding with others through trauma; and compulsively rechecking everything you do.

90 The cost being that more, but less powerful, factors might be extracted.
Finally, Factor 6 included major loadings for crying easily and inability to cry. Overall, though these factors obtained some weaker associations than other symptom clusters, on the whole they still powerfully explain most of the variation inherent in the behavioral cluster better than the total 17 symptoms. As such, a new six-factor model allows for a more efficient and accurate assessment of the relationship between symptom severity and foreign policy preferences.

Finally, PCA processes were applied to an investigation of the spiritual symptom questions (N=18). An initial inspection of the correlations among the individual factors found that each achieved the default standard of r=0.3, such that the KMO score of sampling adequacy was next assessed. Importantly, no individual symptoms achieved KMO scores lower than 0.5, and the collection itself scored above the standard (KMO>0.7) such that a PCA analysis is an appropriate form of analysis. Barlett’s test of sphericity echoed this decision, finding a p<.0005 assurance that there are enough correlations within the spiritual symptom category to merit a factor analysis.
### TABLE 1-15. Rotated Component Matrix for PCA: Behavioral Symptoms
(Varimax Rotation of 6-component questionnaire)

<table>
<thead>
<tr>
<th>Original Items</th>
<th>Rotated Component Coefficients</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desire to hurt self/others</td>
<td>.916</td>
<td>.916</td>
</tr>
<tr>
<td>Avoidance of triggers</td>
<td>.823</td>
<td>.767</td>
</tr>
<tr>
<td>Disrupted relationships</td>
<td>.695</td>
<td>.646</td>
</tr>
<tr>
<td>Trouble orienting in space</td>
<td>.660</td>
<td>.857</td>
</tr>
<tr>
<td>Starting many projects and not completing them</td>
<td>.634</td>
<td>.658</td>
</tr>
<tr>
<td>Losing personal items</td>
<td>-.052</td>
<td>.844</td>
</tr>
<tr>
<td>Prone to accidents</td>
<td>.001</td>
<td>.856</td>
</tr>
<tr>
<td>Difficulty starting projects</td>
<td>-.018</td>
<td>.819</td>
</tr>
<tr>
<td>Loss of creativity</td>
<td>.000</td>
<td>.735</td>
</tr>
<tr>
<td>Fear of leaving home</td>
<td>.081</td>
<td>.834</td>
</tr>
<tr>
<td>Trouble keeping track of time</td>
<td>.087</td>
<td>.750</td>
</tr>
<tr>
<td>Loss of sexual interest</td>
<td>-.127</td>
<td>.737</td>
</tr>
<tr>
<td>Bonding with others through trauma</td>
<td>.202</td>
<td>.724</td>
</tr>
<tr>
<td>Compulsively rechecking everything you do</td>
<td>.273</td>
<td>.785</td>
</tr>
<tr>
<td>Crying easily</td>
<td>.034</td>
<td>.800</td>
</tr>
<tr>
<td>Inability to cry</td>
<td>.286</td>
<td>.711</td>
</tr>
</tbody>
</table>

Note: Major loadings for each item are bolded.

Once again using the Eigenvalue-one, proportion of total variance, and scree plot criteria, a total of four spiritual factors were extracted that encompass most of the variation in the data (as seen in Table 1-16). The Varimax orthogonal rotation is...
### TABLE 1-16. Total Variance Explained, Components for PCA: Spiritual Symptoms.

<table>
<thead>
<tr>
<th>Component</th>
<th>Total</th>
<th>% of Variance</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9.714</td>
<td>53.965</td>
<td>53.965</td>
</tr>
<tr>
<td>2</td>
<td>1.742</td>
<td>9.679</td>
<td>63.644</td>
</tr>
<tr>
<td>3</td>
<td>1.361</td>
<td>7.562</td>
<td>71.206</td>
</tr>
<tr>
<td>4</td>
<td>1.147</td>
<td>6.373</td>
<td>77.579</td>
</tr>
</tbody>
</table>

### TABLE 1-17. Rotated Component Matrix for PCA: Spiritual Symptoms (Varimax Rotation of 4-component questionnaire)

<table>
<thead>
<tr>
<th>Original Items</th>
<th>Rotated Component Coefficients</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Self-judgment or self-blame</td>
<td>.830</td>
<td>-.023</td>
</tr>
<tr>
<td>Shame</td>
<td>.805</td>
<td>.204</td>
</tr>
<tr>
<td>Guilt</td>
<td>.752</td>
<td>.345</td>
</tr>
<tr>
<td>Feelings of worthlessness</td>
<td>.728</td>
<td>.321</td>
</tr>
<tr>
<td>No sense of future</td>
<td>.677</td>
<td>.597</td>
</tr>
<tr>
<td>Feeling defeated</td>
<td>.653</td>
<td>.485</td>
</tr>
<tr>
<td>A sense of horror at subsequent traumatic events</td>
<td>.631</td>
<td>.011</td>
</tr>
<tr>
<td>Numbing</td>
<td>.474</td>
<td>.473</td>
</tr>
<tr>
<td>Apathy</td>
<td>.050</td>
<td>.912</td>
</tr>
<tr>
<td>Disinterest in life</td>
<td>.082</td>
<td>.881</td>
</tr>
<tr>
<td>Feelings of hopelessness</td>
<td>.497</td>
<td>.643</td>
</tr>
<tr>
<td>Feeling doomed</td>
<td>.537</td>
<td>.639</td>
</tr>
<tr>
<td>Alienation</td>
<td>.071</td>
<td>.291</td>
</tr>
<tr>
<td>Distrust</td>
<td>.325</td>
<td>.152</td>
</tr>
<tr>
<td>Suppression</td>
<td>.300</td>
<td>.408</td>
</tr>
<tr>
<td>Feeling dead</td>
<td>.440</td>
<td>.477</td>
</tr>
<tr>
<td>Feeling disconnected</td>
<td>.109</td>
<td>.069</td>
</tr>
<tr>
<td>Feeling frozen</td>
<td>.461</td>
<td>.308</td>
</tr>
</tbody>
</table>

*Note: Major loadings for each item are bolded.*

provided in Table 1-17, including the total loadings on each factor that the symptoms obtained. Factor 1 included major loadings for self-judgment or self-blame; shame; guilt; feelings of worthlessness; no sense of future; feeling defeated; a sense of horror at
subsequent traumatic events; and numbing. Factor 2 included major loadings for apathy; disinterest in life; feelings of hopelessness; and feeling doomed. Factor 3 included major loadings for alienation; distrust; suppression; and feeling dead. Finally, Factor 4 included major loadings for feeling disconnected and feeling frozen. Unique to the spiritual symptom cluster, note that one common factor explained upwards of 53% of the variance in the symptoms—indicating that a reduction not only gives us a more accurate understanding of this dysregulation symptom category, but also that the PCA provided new, more distilled encapsulations of these variables to be applied in subsequent analyses.

In sum, the elaborate but revealing processes of the PCA contributed two major elements to the overall plausibility probe at hand. First and foremost, these analyses gave us a better understanding of ANS dysregulation. The battery of symptom questions—derived, as noted in Section III, from a series of well-validated scales used in the literature—was necessary in order to capture overall symptoms in each cluster with a reasonable degree of validity and reliability. Yet, the PCA analysis revealed that each cluster was, at its core, defined primarily by four to six associations (rather than 17 to 22). Importantly, this does not suggest that only four symptoms define emotional symptoms of ANS dysregulation—it demonstrates that of the many emotional symptoms that define ANS dysregulation, they vary according to four common themes. The existence of these factors (and specification of each, such that individuals obtain certain rankings within each) represents a major contribution to our understanding of combat-related dysregulation. Yet, second and perhaps most importantly for the probe,
the factors extracted from the PCA give us the tools to better measure the relationship between dysregulation and foreign policy preferences. These powerfully distilled factors reduce the overall amount of random error noise and variance that may have deleteriously impacted the overall parametric associations evaluated in the earlier analyses. The factors derived from the PCA provide our overall exploration of the association between dysregulation and foreign policy with a great deal more specificity.

Indeed, the earlier regressions run to assess the relationships between symptoms of ANS dysregulation and foreign policy preferences across cooperation, neutrality, and aggression can be re-analyzed using these more specified inputs. A multivariate analysis evaluating the impact of each extracted factor on foreign policy preferences was performed for each symptom cluster (i.e., between four and six factors for each specific symptom category were used to explain foreign policy preferences). The results are printed in Table 1-18. These results show that, even in their deeper layer of specificity and sophistication, the regressions reflect some of the similar outcomes of the generalized symptom severity regression analyses. The vast majority of individual factors hold no significant relationship with foreign policy preferences according to the cooperative/neutral/aggressive scale. There is little indication that, according to H2B,

---

91 Importantly, PCA is only informative and appropriate for independent variables, as the factors produced hold no meaningful interpretations (e.g., if one were to assess the impact of total number of traumatic combat experiences on the emotional symptoms of ANS dysregulation, doing so for individual and undefined thematic ‘factors’ one-by-one would hold no substantive meaning).
TABLE 1-18. PCA factors for ANS Symptoms and Foreign Policy Preferences.

<table>
<thead>
<tr>
<th>Symptom Factor</th>
<th>Physical-FP Model</th>
<th>Emotional-FP Model</th>
<th>Cognitive-FP Model</th>
<th>Behavioral-FP Model</th>
<th>Spiritual-FP Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-0.032 (0.652)</td>
<td>-0.039 (0.584)</td>
<td>0.019 (0.786)</td>
<td>-0.053 (0.416)</td>
<td>0.012 (0.873)</td>
</tr>
<tr>
<td>2</td>
<td>0.037 (0.616)</td>
<td>-0.059 (0.410)</td>
<td>-0.169* (0.034)</td>
<td>-0.117‡ (0.076)</td>
<td>-0.101 (0.169)</td>
</tr>
<tr>
<td>3</td>
<td>0.024 (0.765)</td>
<td>0.080 (0.270)</td>
<td>0.025 (0.722)</td>
<td>-0.169* (0.012)</td>
<td>0.062 (0.395)</td>
</tr>
<tr>
<td>4</td>
<td>-0.087 (0.236)</td>
<td>0.033 (0.662)</td>
<td>-0.069 (0.428)</td>
<td>-0.012 (0.852)</td>
<td>-0.010 (0.892)</td>
</tr>
<tr>
<td>5</td>
<td>0.072 (0.355)</td>
<td>-0.003 (.972)</td>
<td>0.016 (0.803)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>-0.034 (0.675)</td>
<td></td>
<td></td>
<td>0.142* (.049)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>3.245*** (.000)</td>
<td>3.251*** (.000)</td>
<td>3.237*** (.000)</td>
<td>3.266*** (.000)</td>
<td>3.253*** (.000)</td>
</tr>
</tbody>
</table>

N = 42
p-values in parentheses; ***p<.001; **p<.01; *p<.05; ‡p<.1

Increases in dysregulation lead to either neutral/avoidant foreign policies or either pole of internationalist or isolationist policies.

Some interesting results do emerge for one specific variant of the model: the behavioral symptom factors do achieve significance at the p<.01 level (with three of the six factors achieving some level of significance). In other words, as respondents reported more severe symptomatology associated with the extracted behavioral factors,
they became significantly less aggressive in their overall foreign policy preferences. This provides an intriguing first indicator of this largely limbic symptom category.92

Additional control variables were introduced to parallel the testing of the theory’s hypotheses with alternative hypotheses surrounding pre-existing preferences. Specifically, variables like those measuring whether there was a family legacy of military service and overall levels of education were included, as shown in Table 1-19. The general significance of the behavioral model was retained; however, the control factors clearly played powerful roles in the overall models. Indeed, parental military service had a low-level positive and significant impact across three of the models, indicating that having parents who served may make individuals more likely to pursue aggressive foreign policies, more so than some of the competing dysregulation effects. This finding offers two key takeaways for the theory: first, it is clear that non-dysregulation-related factors are more influential than most dysregulation factors in explaining foreign policy preferences, except for behavioral symptoms. Something about those specific symptom factors continues to be more influential than even parental military service or education as an indicator of foreign policy preferences.

92 Notably, the second factor of cognitive symptomatology obtains a similar negative and significant association—suggesting that as individuals more severely satisfied the symptoms associated with that particular factor, they also reflect less aggressive foreign policy preferences. However, because only one factor of four in the model obtains significance, it is inappropriate to conclude that ANS-related changes in cognition directly led to any shifts in foreign policy preferences. A small link may exist between documented cognitive degradation and more neutral foreign policy preferences (though note that this would also directly contradict the thought exercise in the prior analyses, in which cognitive degradation might be harder to identify precisely because of cognitive degradation).
### TABLE 1.9. PCA factors and Controls for ANS Symptoms and Foreign Policy Preferences.

<table>
<thead>
<tr>
<th></th>
<th>Physical-FP Model</th>
<th>Emotional-FP Model</th>
<th>Cognitive-FP Model</th>
<th>Behavioral-FP Model</th>
<th>Spiritual-FP Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptom Factor 1</td>
<td>-.007 (.918)</td>
<td>-.040 (.558)</td>
<td>-.027 (.701)</td>
<td>-.030 (.645)</td>
<td>.003 (.972)</td>
</tr>
<tr>
<td>Symptom Factor 2</td>
<td>-.017 (.805)</td>
<td>-.053 (.488)</td>
<td>-.205* (.015)</td>
<td>-.154* (.013)</td>
<td>-.128‡ (.088)</td>
</tr>
<tr>
<td>Symptom Factor 3</td>
<td>.015 (.842)</td>
<td>.066 (.364)</td>
<td>-.005 (.935)</td>
<td>-.134* (.044)</td>
<td>.062 (.395)</td>
</tr>
<tr>
<td>Symptom Factor 4</td>
<td>-.119 (.152)</td>
<td>.017 (.823)</td>
<td>-.105 (.216)</td>
<td>-.050 (.399)</td>
<td>-.007 (.918)</td>
</tr>
<tr>
<td>Symptom Factor 5</td>
<td>.076 (.313)</td>
<td>-.005 (.944)</td>
<td>-.037</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symptom Factor 6</td>
<td>-.005 (.949)</td>
<td></td>
<td></td>
<td>.077 (.257)</td>
<td></td>
</tr>
<tr>
<td>Highest rank obtained</td>
<td>-.108 (.552)</td>
<td>-.129 (.499)</td>
<td>-.024 (.889)</td>
<td>-.138 (.374)</td>
<td>-.121 (.478)</td>
</tr>
<tr>
<td>Education</td>
<td>-.072 (.539)</td>
<td>-.073 (.557)</td>
<td>-.019 (.856)</td>
<td>-.077 (.476)</td>
<td>-.094 (.410)</td>
</tr>
<tr>
<td>Parent(s) served</td>
<td>.324 (.118)</td>
<td>.221 (.308)</td>
<td>.341‡ (.076)</td>
<td>.311‡ (.096)</td>
<td>.325‡ (.100)</td>
</tr>
<tr>
<td>Constant</td>
<td>3.210*** (.000)</td>
<td>3.443*** (.001)</td>
<td>2.799*** (.001)</td>
<td>3.320*** (.000)</td>
<td>3.353*** (.000)</td>
</tr>
<tr>
<td>R-squared</td>
<td>.157</td>
<td>.118</td>
<td>.234</td>
<td>.386</td>
<td>.173</td>
</tr>
<tr>
<td>F Statistic</td>
<td>.582 (.801)</td>
<td>.485 (.857)</td>
<td>1.306</td>
<td>1.954‡ (.085)</td>
<td>.894 (.523)</td>
</tr>
</tbody>
</table>

N = 37

p-values in parentheses; ***p<.001; **p<.01; *p<.05; ‡p<.1

Second, the direction matters — whereas the parental military service control variable led to more aggressive foreign policy preferences, any dysregulation factor of significance led to less aggressive foreign policy preferences.
One could thus argue that some limited evidence suggests that H2A and H2B operate as hypothesized—there does seem to be a powerful connection between amplified behavioral (i.e., System 1-mediated) responses, some cognitive degradation (i.e., System 2-mediated) symptoms, and more neutral/aversive foreign policy preferences. However, one could just as easily argue that the same models suggest that other forms of System 1-mediated dysregulation (e.g., emotional and physical symptoms) and System 2-mediated symptoms (e.g., other factors for cognitive symptoms) have no demonstrable relationship with foreign policy preferences, such that the dramatic link between combat trauma exposure and dysregulation does not ultimately translate to shifts in overall foreign policy preferences.

Summary

Overall, the findings from Study 1 must be interpreted with a proverbial grain of salt due to the limited overall sample size—however, among the results that were obtained, the findings provide a wealth of interesting lessons for the initial investigation of the plausibility of the relationships between traumatic combat experiences, ANS dysregulation, and foreign policy preferences. Above all else, this study demonstrated a clear, unique, and new relationship between the conceptualizations of combat experiences and ANS dysregulation. This may seem like a straightforward finding, but it is essential to emphasize just how little comprehensive research exists connecting the kinds of variation observed here in combat experiences with the multitude of symptoms considered in the ANS dysregulation categories. At the same time, even the intra-
variable specification of ANS dysregulation symptoms via PCA contributed a brand new conceptualization to the overall research, allowing for collections of 4-6 component variables that capture the essence of the symptoms to be collected and analyzed. This insight into the mechanisms within ANS dysregulation—and their specific weight among each other—offers new insight into what symptoms ‘matter’ for dysregulation in combat veterans. In other words, rather than simply stating that there is evidence of a degree of PTSD/other major mood disorder diagnosis in those with combat experience, the PCA analysis allows us to say there are a multitude of diverse symptoms that might not fall within typical classifications of diagnoses.

That said, inherent in any plausibility probe, there are a number of significant limitations to Study 1’s findings. First and foremost, as noted throughout this dissertation: some of the theory’s potential explanatory power is lost by virtue of this study’s inability to assess pre-military service foreign policy preferences. The lack of panel effects data means that even convincing findings cannot be definitely argued to be unique to the mechanisms at hand—meaning the central alternative hypothesis goes untested. Similarly, the purposive sample means that any inferential statistics are quite limited in the population they are allowed to extrapolate to. The overall snapshot captured by this assessment is unique among the cohort of respondents, but any application of these lessons to the broader military is necessarily in question. Also, as summarized earlier, the ethical interest of the survey was to minimize any potential reactivation of stress-related arousal—and as such, the survey did not ask about past traumas, including ACEs and prior traumatic episodes. This limitation, in addition to
the kinds of validated instruments that were selected versus others, means that Study 1 may be missing interesting pieces of information for investigating the question at hand.

Another clear limitation of Study 1’s individual analysis is its treatment of the individual variables of interest. The quantitative transformations of qualitatively obtained data for symptom prevalence and severity, as well as for foreign policy preferences, simply may not perfectly approximate the internal validity necessary to accurately assess these relationships. Granted, these scales were based on transformations of well-validated existing scales, and were intentionally generalized for the plausibility probe as a means of detecting initial patterns in the data behavior prior to more in-depth hypothesis testing. In other words, as noted in the research design, transforming 98 individual-level symptom questions into one indicator of overall symptom severity undoubtedly oversimplifies the content of dysregulation, and yet doing so best allows for the first and most general trends to be established. Similarly, calculating one comprehensive data measure that encapsulates 18 distinct measures of aggressive/cooperative foreign policy choices allows the plausibility probe to show which way the proverbial wind is blowing before more in-depth resources are committed, but in doing so dilutes many of the individual factors influencing foreign policy preferences in the first place. Though appropriate to the plausibility probe design, there is no doubt that these transformations sacrificed some of the findings’ specificity and reliability. Furthermore, in tandem with the intentional generality of the types of variables used, some of the only statistical methods available were relatively simple in their scope and level of robustness. Future specifications of variables may
allow for higher-order statistical methods, which may uncover additional layers of inference beyond these initial specifications.
SECTION IV

PART 2

Analysis and Interpretation of Study 2:

A Comparative Survey of Veterans and Civilians

Data for Study 2 was collected via surveys administered to two large-scale random samples of U.S. veterans and civilians with/without military service (as detailed in Section III). In the veteran sample, a total of 1,853 veterans were surveyed between July and September of 2011; this total sample represented a response rate of 5.8% as calculated by Pew Research Center, based on a series of screening procedures implemented to ensure appropriate access to (a) randomly sampled veterans and specifically (b) both pre-9/11 and post-9/11 veterans (Pew Research Center, 2011b). As noted in Section III, the majority of interviews conducted were via telephone, though a small set (N=214) of post-9/11 veterans were randomly sampled from existing panels using a web questionnaire (Pew Research Center, 2011b). Surveys were retained for all respondents, including partial survey completions (with missing values excluded list-wise when appropriate for analysis).

Based on valid surveys, this random sample captured the following proportions of veterans: 26.8% were pre-9/11 veterans who served in combat, while 23.1% were post-9/11 veterans who served in combat.\textsuperscript{93} In addition, 34.7% of the sample was

\textsuperscript{93} It can be assumed that all data reported for Study 2’s veteran survey is attributable to Pew Research Center (2011b).
comprised of pre-9/11 veterans who did not serve in combat, while 15.4% of the sample was made up of post-9/11 veterans who did not serve in combat. Most veterans served 3-4 years of military service (32.5%), though notable proportions also served two years or less (26.2%), 5-9 years (17.1%), and 10 years or more (24.0%). The median number of deployments away from permanent duty stations was two, though 34.2% of respondents reported at least 3 or more deployments (with 7.7% reporting that they knew they deployed more than once but were unsure of the total number). Of those who reported their actual deployment locations (N=719), the percent of respondents who served in Iraq was 39.9%, while the percent of respondents who served in Afghanistan was 14.9%. Notably, 42.6% of the sample reported their highest rank as enlisted grade, compared to roughly 39.8% reporting as non-commissioned officers and 14.5% reporting as officers. Respondents were majority Caucasian (83.8%) and majority male (89.5%), with roughly 33% of respondents falling under the age of 50. Most achieved either high school (24.9%) or some college coursework (32.3%) as their highest level of education achieved. Finally, roughly 50% of respondents identified as conservative in their political views, while 46.8% identified as moderate or liberal (34.8% moderate, 12% liberal).

As noted in Section III, the survey design included questions that were able to loosely approximate prevalence of trauma exposure during conflict. As prescribed by categorical variable analysis, Spearman correlations were calculated for these recoded measures, and are reprinted in Table 2-1. Among servicemembers exposed to combat, the rate who reported a personal injury, having a friend in combat injured, and having a
### TABLE 2-1. Combat Service and Trauma Exposure.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Spearman’s Rho Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combat</td>
<td></td>
</tr>
<tr>
<td>Friend Killed</td>
<td>0.357*** (.000)</td>
</tr>
<tr>
<td>(N=1819)</td>
<td></td>
</tr>
<tr>
<td>Combat</td>
<td></td>
</tr>
<tr>
<td>Friend Injured</td>
<td>0.395*** (.000)</td>
</tr>
<tr>
<td>(N=1821)</td>
<td></td>
</tr>
<tr>
<td>Combat</td>
<td></td>
</tr>
<tr>
<td>Personally injured</td>
<td>0.106*** (.000)</td>
</tr>
<tr>
<td>(N=1830)</td>
<td></td>
</tr>
<tr>
<td>Combat</td>
<td></td>
</tr>
<tr>
<td>Thanks for Service</td>
<td>0.155*** (.000)</td>
</tr>
<tr>
<td>(N=705)</td>
<td></td>
</tr>
</tbody>
</table>

*p-values in parentheses; ***p<.001; **p<.01; *p<.05; ‡p<.1

friend in combat killed were all significant. Uniquely, Study 2 also offers the first initial insight into possible stressors across the deployment cycle, specifically relative to the ‘street theater’ stressor of being thanked for service as detailed in Section II; as Table 2-1 shows, this experience is also significantly correlated with combat service. Yet, these correlations do not offer any insight into the actual rates of exposure to these traumatic experiences, only confirming that their relationship with combat service is indeed unique; as such, cross-tabulations were constructed as shown in Tables 2-2 through 2-5. The clear raw differentials between combat service and knowing a friend killed,

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94 To be clear, this is not to suggest that being thanked for service is considered a stressor of equal magnitude to a combat injury — rather, it is included simply as a possible proxy for a potentially taxing sense of disconnection during the postdeployment phase, as argued in Section II.
### TABLE 2-2. Combat Service and Trauma Exposure - Friend Killed.

<table>
<thead>
<tr>
<th>Combat Service?</th>
<th>No</th>
<th>Yes</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>633</td>
<td>309</td>
<td>942</td>
</tr>
<tr>
<td>(69.6%)</td>
<td>(34.0%)</td>
<td>(51.8%)</td>
<td></td>
</tr>
<tr>
<td>Friend Killed?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>276</td>
<td>601</td>
<td>877</td>
</tr>
<tr>
<td>(30.4%)</td>
<td>(66.0%)</td>
<td>(48.2%)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>909</td>
<td>910</td>
<td>1819</td>
</tr>
<tr>
<td>(100.0%)</td>
<td>(100.0%)</td>
<td>(100.0%)</td>
<td></td>
</tr>
</tbody>
</table>

\[ \chi^2 = 231.878*** (.000) \]

Cramer’s V = .357*** (.000)

*p-values in parentheses; ***p<.001; **p<.01; *p<.05; ‡p<.1

### TABLE 2-3. Combat Service and Trauma Exposure - Personally Injured.

<table>
<thead>
<tr>
<th>Combat Service?</th>
<th>No</th>
<th>Yes</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>838</td>
<td>771</td>
<td>1609</td>
</tr>
<tr>
<td>(91.4%)</td>
<td>(84.4%)</td>
<td>(87.9%)</td>
<td></td>
</tr>
<tr>
<td>Personally Injured?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>79</td>
<td>142</td>
<td>221</td>
</tr>
<tr>
<td>(8.6%)</td>
<td>(15.6%)</td>
<td>(12.1%)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>917</td>
<td>913</td>
<td>1830</td>
</tr>
<tr>
<td>(100.0%)</td>
<td>(100.0%)</td>
<td>(100.0%)</td>
<td></td>
</tr>
</tbody>
</table>

\[ \chi^2 = 20.741*** (.000) \]

Cramer’s V = .106*** (.000)

*p-values in parentheses; ***p<.001; **p<.01; *p<.05; ‡p<.1
### TABLE 2-4. Combat Service and Trauma Exposure - Friend Injured.

<table>
<thead>
<tr>
<th>Combat Service?</th>
<th>No</th>
<th>Yes</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>679</td>
<td>316</td>
<td>995</td>
</tr>
<tr>
<td>(74.2%)</td>
<td>(34.9%)</td>
<td></td>
<td>(54.6%)</td>
</tr>
<tr>
<td>Yes</td>
<td>236</td>
<td>590</td>
<td>826</td>
</tr>
<tr>
<td>(25.8%)</td>
<td>(65.1%)</td>
<td></td>
<td>(45.4%)</td>
</tr>
<tr>
<td>Total</td>
<td>915</td>
<td>906</td>
<td>1821</td>
</tr>
<tr>
<td>(100.0%)</td>
<td>(100.0%)</td>
<td></td>
<td>(100.0%)</td>
</tr>
</tbody>
</table>

χ² = 284.108*** (.000)
Cramer’s V = .395*** (.000)

*p-values in parentheses; ***p<.001; **p<.01; *p<.05; ‡p<.1

### TABLE 2-5. Combat Service and Trauma Exposure - Thanked for Service.

<table>
<thead>
<tr>
<th>Combat Service?</th>
<th>No</th>
<th>Yes</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>30</td>
<td>13</td>
<td>43</td>
</tr>
<tr>
<td>(10.6%)</td>
<td>(3.1%)</td>
<td></td>
<td>(6.1%)</td>
</tr>
<tr>
<td>Thanked for Service?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>252</td>
<td>410</td>
<td>662</td>
</tr>
<tr>
<td>(89.4%)</td>
<td>(96.9%)</td>
<td></td>
<td>(93.9%)</td>
</tr>
<tr>
<td>Total</td>
<td>282</td>
<td>423</td>
<td>705</td>
</tr>
<tr>
<td>(100.0%)</td>
<td>(100.0%)</td>
<td></td>
<td>(100.0%)</td>
</tr>
</tbody>
</table>

χ² = 16.907*** (.000)
Cramer’s V = .155*** (.000)

*p-values in parentheses; ***p<.001; **p<.01; *p<.05; ‡p<.1
knowing a friend injured, and being thanked for one’s service after the fact show just how reliably servicemembers were exposed to these particular combat experiences. Being personally injured in combat is a much smaller proportion of the overall sample, but still happened in a significant proportion when compared to those who did not serve in combat. The chi-squared statistic and Cramer’s V measure of association achieve significance for each topic, suggesting that the more likely an individual was to serve in combat, the more likely they were to experience at least some stressor exposure. Though these assessments problematically do not provide the variation in traumatic combat-related experiences that Study 1 offered, they do indicate that individuals who serve in combat are fairly reliably (about two-thirds of the sample) exposed to three to four types of traumatic stressors. These assessments thus reflect the frustratingly narrow categorizations of combat and trauma used in the prior literature, but do so in a way that still shows combat exposure reliably increases trauma exposure.

Based on this information, it is reasonable to presume that combat involves some amount of trauma exposure—such that combat can be treated as a proxy variable for combat trauma exposure, and the relationship between combat and overall symptoms of ANS dysregulation (i.e., H1) can next be assessed. The handful of symptom questions included in this survey surrounded increased outbursts, increased family strains, no

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95 Of course, while it is possible to have never served in combat and still have known a friend injured/killed in combat, it is not theoretically possible to have personally suffered a combat injury and never have served in combat. In other words, no respondents should have reported that they were personally injured in combat while simultaneously reporting that they had never served in combat in the cross-tabulation; this proportion (79 of 917 respondents) is thus attributed to survey error.
longer caring about things, a more difficult time adjusting to civilian life, and an additional variable asking about an increase in specific mental health diagnoses—all of which conceptually reflect some of the negative symptoms of ANS dysregulation reflected in Study 1. In addition, two other ‘positive’ questions about outcomes following military service—feeling proud and as if you appreciated life more—were included in the survey. Thus, in order to confirm that the negative symptom questions all appropriately fall within the category of ANS symptomatology, basic Spearman’s correlations were run to assess their relationships among each other. As shown in Table 2-6, every negative symptom reflected a strong and positive correlation with the others—indicating that these questions do, in fact, all serve as an accurate collection of negative symptomatology (even if dramatically lacking the variety seen in Study 1). Positive symptoms were positively and significantly correlated with each other, as expected; however, when correlated with negative symptoms, the positive feelings were either insignificant or negative/weakly significantly correlated with negative symptoms. In short, the close positive correlations within the possible ANS dysregulation symptoms—and the negative weak correlations between those symptoms and positive outcomes of military service—suggest we can reliably use these individual measures as proxy variables for the presence of ANS dysregulation.

96 Importantly for this plausibility probe, a qualitative inspection of the content of the dysregulation symptomatology proxy questions suggests they reflect increased manifestations of primarily emotional and/or behavioral symptoms (e.g., increased outbursts and difficulty adjusting to civilian life).
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Appreciated life more</th>
<th>Felt proud</th>
<th>Family strains</th>
<th>Don’t care about things</th>
<th>Outbursts/ Irritability</th>
<th>Difficulty adjusting to civilian life</th>
<th>Feel like you have PTSD symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appreciated life more</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.169***</td>
</tr>
<tr>
<td>Felt proud</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.018</td>
</tr>
<tr>
<td>Family strains</td>
<td>-0.043</td>
<td>0.018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.447***</td>
</tr>
<tr>
<td>Don’t care about things</td>
<td>-0.100**</td>
<td>-0.030</td>
<td>0.447***</td>
<td></td>
<td>0.590***</td>
<td></td>
<td>0.426***</td>
</tr>
<tr>
<td>Outbursts/ Irritability</td>
<td>-0.073‡</td>
<td>0.004</td>
<td>0.512***</td>
<td></td>
<td>0.590***</td>
<td></td>
<td>0.503***</td>
</tr>
<tr>
<td>Difficulty adjusting to civilian life</td>
<td>-0.086*</td>
<td>0.002</td>
<td>0.430***</td>
<td></td>
<td>0.426***</td>
<td></td>
<td>0.503***</td>
</tr>
<tr>
<td>Feel like you have PTSD symptoms</td>
<td>-0.028</td>
<td>0.006</td>
<td>0.342***</td>
<td></td>
<td>0.463***</td>
<td></td>
<td>0.519***</td>
</tr>
</tbody>
</table>

***p<.001; **p<.01; *p<.05; ‡p<.1

Given these assurances that (1) combat involves trauma exposure and (2) each of the symptom questions accurately serves as an indicator of ANS dysregulation, chi-squared tests were performed on combat and dysregulation symptoms to evaluate the significance of the variables’ relationship. In support of H1, the tests repeatedly found significant relationships between combat service and symptoms of ANS dysregulation. For instance, combat and increased PTSD diagnoses are shown in Table 2-7 (the other tests confirmed a similar effect—as expected due to the strong correlations among
### TABLE 2-7. Combat Service and Negative ANS Symptoms - PTSD Symptoms.

<table>
<thead>
<tr>
<th>Combat Service?</th>
<th>No</th>
<th>Yes</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>850</td>
<td>570</td>
<td>1420</td>
</tr>
<tr>
<td>(93.1%)</td>
<td>(63.7%)</td>
<td>(78.5%)</td>
<td></td>
</tr>
<tr>
<td>PTSD?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>63</td>
<td>325</td>
<td>388</td>
</tr>
<tr>
<td>(6.9%)</td>
<td>(36.3%)</td>
<td>(21.5%)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>913</td>
<td>895</td>
<td>1808</td>
</tr>
<tr>
<td>(100.0%)</td>
<td>(100.0%)</td>
<td>(100.0%)</td>
<td></td>
</tr>
</tbody>
</table>

$\chi^2 = 231.973^{***} (.000)$  
*Cramer’s V*=0.358*** (.000)  
*p-values in parentheses; ***p<.001; **p<.01; *p<.05; ‡p<.1


<table>
<thead>
<tr>
<th>Combat Service?</th>
<th>No</th>
<th>Yes</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>10</td>
<td>7</td>
<td>17</td>
</tr>
<tr>
<td>(3.5%)</td>
<td>(1.7%)</td>
<td>(2.4%)</td>
<td></td>
</tr>
<tr>
<td>Felt proud?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>272</td>
<td>417</td>
<td>689</td>
</tr>
<tr>
<td>(96.5%)</td>
<td>(98.3%)</td>
<td>(97.6%)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>282</td>
<td>424</td>
<td>706</td>
</tr>
<tr>
<td>(100.0%)</td>
<td>(100.0%)</td>
<td>(100.0%)</td>
<td></td>
</tr>
</tbody>
</table>

$\chi^2 = 2.588 (.108)$  
*Cramer’s V*=0.061*** (.108)  
*p-values in parentheses; ***p<.001; **p<.01; *p<.05; ‡p<.1
symptoms—and as such are not reprinted here), with Cramer’s V indicating a moderate relationship. Interestingly, the chi-squared tests of the relationship between combat and either of the ‘positive’ outcomes of military service were not significant (and per Cramer’s V, weakly associated), as demonstrated in Table 2-8. Therefore, even working with limited ways of evaluating combat service and ANS dysregulation, Study 2 provides reasonable evidence in its large random sample to suggest that combat experience motivates increases in ANS dysregulation symptomatology.

Following the confirmatory evidence provided for H1, Study 2 thus proceeded to assess the content of the second hypotheses, namely H2B. The survey included several questions measuring individual attitudes about aggressive/neutral foreign policy decisions, including instruments evaluating specific attitudes towards the conflicts in Iraq and Afghanistan, as well as generalized questions about the desirability of increased drone use and the role of the military in nation-building. Though distinct ANS symptom categories and severities were not able to be evaluated respective to foreign policy choices (per Study 1), combat as a reliable proxy for dysregulation was evaluated according to how aggressive it predicted overall foreign policy preferences would be. Specifically, because all of the variables as originally coded were categorical in nature (and few enough in number that any composite transformation was deemed unproductive), additional chi-squared tests were used evaluating the significance of the relationships between combat and foreign policy preferences. These tests are printed in Table 2-9, and show several significant findings for interpretation. The table demonstrates that there is a significant relationship between combat service and
TABLE 2-9. Combat Service and Foreign Policy Preferences.

<table>
<thead>
<tr>
<th>Combat Service?</th>
<th>No</th>
<th>Yes</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Was the war in Iraq worth it?</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\chi^2 = 5.453^*$</td>
<td>No (57.6%)</td>
<td>Yes (52.0%)</td>
<td>(54.8%)</td>
</tr>
<tr>
<td>$Cramer's V = 0.056^*$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (100.0%)</td>
<td>505</td>
<td>459</td>
<td>964</td>
</tr>
</tbody>
</table>

| **B. Was the war in Afghanistan worth it?** |          |          |         |
| $\chi^2 = 2.971^*$ | No (52.7%) | Yes (48.6%) | (50.6%) |
| $Cramer's V = 0.041‡$ |          |          |         |
| Total (100.0%) | 460      | 423      | 883     |

| **C. Should the U.S. undertake nation-building?** |          |          |         |
| $\chi^2 = 4.169^*$ | No (49.2%) | Yes (54.0%) | (51.6%) |
| $Cramer's V = 0.048^*$ |          |          |         |
| Total (100.0%) | 441      | 480      | 921     |

| **D. How do you feel about the use of drones?** |          |          |         |
| $\chi^2 = 0.863$ | Good thing (90.4%) | Neither (2.7%) | (2.3%) |
| $Cramer's V = 0.022$ | Neither (2.7%) | Bad thing (6.9%) | (7.0%) |
| Total (100.0%) | 812      | 24       | 1626    |

attitudes towards the Iraq and Afghanistan interventions being ‘worth it’ — however, per Cramer’s V, those relationships were generally weakly associated. Relative to drone use, combat (and thus dysregulation) had a highly insignificant relationship with
attitudes regarding the use of unmanned aerial vehicles in war-time operations. Finally, relative to the appropriateness of the military’s increasing role in nation-building activities, combat was associated with a significant (p<.05) preference against reconstruction as an appropriate use of the military.

These varying lessons yield some interesting insights relative to H2B’s prediction that combat and related dysregulation would motivate less aggressive foreign policy preferences. To an extent, these findings would seem to contradict that hypothesis—even though none achieved utmost significance of p<.01, the significance of the distinctly interventionist support for the interventions in Iraq and Afghanistan suggests that combat (and thus its significant correlate, dysregulation) might actual motivate preferences for greater active engagement in international affairs rather than the neutral/avoidance attitudes posited. Of course, questions of wars’ ‘worth’ may have several interpretations. For instance, an interesting effect may also be distorting this finding, insomuch as individuals might be trying to reinterpret or justify their unique service—in other words, if the questions were posed as hypothetical assessments of whether a war is worth it, rather than a war the individual specifically participated in, responses may more directly capture foreign policy attitudes. However, given that some combat veterans from earlier eras undoubtedly contributed to this significance, in general this finding remains a strong contradiction to the idea that individuals would want to avoid more aggressive foreign policy action.

In addition, the insignificant finding on drone use might actually yield some powerfully interesting information within its insignificance. Whereas questions about
specific wars and other military activities yielded a clear relationship with combat (and likely combat-related dysregulation), opinions on the military’s use of drones were demonstrably non-affiliated. Theoretically, this could be attributable to a lack of content or context triggers (per Section II’s theory)—individuals’ general unfamiliarity with unmanned aerial vehicles or their non-association with traditional war might indicate that general everyday policymaking preferences find no specific relationship with combat service. At the same time then, this argument provides evidence in favor of ground war-related decision-making as a specific branch of foreign policy likely to hold a significant relationship with combat service (albeit in a contradictory way).

Though these individual findings within the relationship between combat service and foreign policy preferences are interesting, one of the major values added by Study 2’s survey is the ability to evaluate more detailed control variables as explanations for overall foreign policy preferences, in competition with combat experience and dysregulation. Specifically, multinomial logistic regression was applied to combat service (and therefore service-related dysregulation), foreign policy preferences, and a collection of explanatory factors including political ideology, education, and age. The results for foreign policy issues are reprinted in Table 2-10. These findings suggest some dramatic results; for instance, for the question of whether the Iraq conflict was worth it, combat service continues to hold a weakly significant (p<.1) relationship with overall policy preference. In contrast, however, both age and political ideology embodied a highly significant (p<.001) relationship with views of the war as worth it. The model itself explains little overall variation in the attitudes towards the war (pseudo R-
TABLE 2-10. Combat Veterans’ Foreign Policy Preferences - Likelihood Ratio Tests.

<table>
<thead>
<tr>
<th></th>
<th>Iraq Model</th>
<th>Afghanistan Model</th>
<th>Nation-Building Model</th>
<th>Drones Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combat</td>
<td>582.658*</td>
<td>623.017</td>
<td>624.896</td>
<td>530.284</td>
</tr>
<tr>
<td></td>
<td>(.037)</td>
<td>(.449)</td>
<td>(.137)</td>
<td>(.581)</td>
</tr>
<tr>
<td>Ideology</td>
<td>719.800***</td>
<td>644.917***</td>
<td>632.108</td>
<td>554.149*</td>
</tr>
<tr>
<td></td>
<td>(.000)</td>
<td>(.001)</td>
<td>(.151)</td>
<td>(.015)</td>
</tr>
<tr>
<td>Education</td>
<td>592.126‡</td>
<td>634.011</td>
<td>631.928</td>
<td>540.213</td>
</tr>
<tr>
<td></td>
<td>(.054)</td>
<td>(.116)</td>
<td>(.235)</td>
<td>(.685)</td>
</tr>
<tr>
<td>Age</td>
<td>606.462***</td>
<td>687.323***</td>
<td>636.585**</td>
<td>535.440</td>
</tr>
<tr>
<td></td>
<td>(.000)</td>
<td>(.000)</td>
<td>(.008)</td>
<td>(.620)</td>
</tr>
<tr>
<td>Intercept</td>
<td>578.299***</td>
<td>622.444***</td>
<td>622.682‡</td>
<td>529.198</td>
</tr>
<tr>
<td></td>
<td>(.000)</td>
<td>(.000)</td>
<td>(.006)</td>
<td>(.173)</td>
</tr>
<tr>
<td>Pseudo R-Squared</td>
<td>.097</td>
<td>.055</td>
<td>.020</td>
<td>.024</td>
</tr>
<tr>
<td>$\chi^2$</td>
<td>178.612***</td>
<td>98.747***</td>
<td>36.278**</td>
<td>43.835</td>
</tr>
<tr>
<td></td>
<td>(.000)</td>
<td>(.000)</td>
<td>(.006)</td>
<td>(.173)</td>
</tr>
<tr>
<td>N</td>
<td>1759</td>
<td>1744</td>
<td>1786</td>
<td>1793</td>
</tr>
</tbody>
</table>

$p$-values in parentheses; ***$p<.001$; **$p<.01$; *$p<.05$; ‡$p<.1$

squared = .097). Taken together, these findings suggest that combat (and thus, likely dysregulation) is perhaps important in shaping foreign policy preferences, but that it is demonstrably less important than other preference factors like ideology or demographic factors like age (and all of these factors fail to explain much variation even taken together). In this sense, it logically seems as though pre-existing, long-term, and/or underlying preferences might explain foreign policy attitudes more than any combat-related dysregulation. An inspection of the findings for whether or not the war in Afghanistan was worth it offers some similar, and different, findings. Namely, while
age remains important, control factors like ideology and specific combat variables get weaker in their overall relationships—suggesting that dysregulation does not have some uniform effect across these particular policy issues, and that outside preferences and demographics continue to dominate overall findings about what motivates foreign policy preferences.\textsuperscript{97}

Findings for the nation-building and drone use foreign policy topics offer another layer of interest to the understanding of the relationship between combat and foreign policy. For nation-building as an appropriate tool of the military, almost no variables achieved significance—except for age ($p<.01$). Ideology, combat, and education level had no significant impact. For drone use, the only relevant factor was ideology, with a minor overall significance ($p<.05$).

Importantly, Study 2’s use of a separate but near identical survey instrument delivered to the general population during the same time period as the veterans’ survey allows for a final comparative assessment between these models and civilian findings. This survey was a random sample design administered to a sample of U.S. civilians in September 2011 ($N=2,003$), with a response rate of approximately 9\% (per calculations from landline and cellular collections) (Pew Research Center, 2011a). A total of 1,664 civilians without any form of military service were analyzed according to a multinomial

\textsuperscript{97} Of course, preferences are not formed in individual vacuums—varying public perceptions of the wars may matter here in individuals’ assessments of them as well. Operations in Afghanistan were more highly and more consistently supported than operations in Iraq (Jacobson, 2010), such that an outside effect may explain the difference between interpretations of the wars’ worth.
logistic regression, comparing the impact of ideology, education, and age on their attitudes toward the same foreign policy questions: whether or not the wars in Iraq and Afghanistan were worth it, their support of the military undertaking nation-building, and their support for the use of drones. The findings are printed in Table 2-11, and show some findings similar to the veterans’ survey—namely, the important role of age in predicting some foreign policy attitudes. However, in this civilian sample, ideology was a much more consistent and powerful predictor for foreign policy attitudes than it was for veterans, obtaining high significance (p<.001) for three of the models.

Finally, by virtue of the Study 2 research design summarized in Section III, there is an important separate qualitative strand of research pursued for the sample of veterans. This monostrand design derives from respondents being offered open-ended questions asking them to describe their combat experiences in Iraq and/or Afghanistan using one word, and inspection and classification of those responses as a means of understanding some of the variation in how respondents interpret their combat experiences (a pseudo-grounded theory approach) (Glaser & Strauss, 1967). Importantly, this does not directly test the hypotheses offered in H1 or H2A/H2B, though it does indirectly offer some potential insight into how ANS dysregulation symptoms might impact individuals’ views of past foreign policy events. In particular,

98 Notably, this kind of data—open-ended responses categories—is often under-utilized in survey questionnaires, due largely to its complicated relationship with quantitative/qualitative analyses (O’Cathain & Thomas, 2004). However, in general, responses to open-ended questions can be considered qualitative data, even if the ‘one word’ limit imposes a theoretical quantitative structure on the participant (Steckler, McLeroy, Goodman, Bird, & McCormick, 1992).
only a handful of respondents recorded positive mentions describing their experiences, including ‘good’ (9), ‘worthwhile’ (19), or other generalized positive terms (16). At the same time, reporting of negative mentions was similarly limited, including ‘stressful’ (9), ‘hard/tough’ (7), ‘scary/fearful’ (6) ‘hell/nighmare/horrifying’ (13), ‘bad/ousy/terrible/horrible’ (12), and other generalized negative terms (24). Perhaps most interesting in this brief inspection of the nature of the terms used was how many terms were distinctly non-valenced; individuals reported their view of the wars using terms such as ‘challenging’ (10), ‘different’ (9), ‘eye-opening’ (13), ‘life-changing’ (11),

<table>
<thead>
<tr>
<th></th>
<th>Iraq Model</th>
<th>Afghanistan Model</th>
<th>Nation-Building Model</th>
<th>Drones Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ideology</strong></td>
<td>701.372***</td>
<td>629.508***</td>
<td>569.624 (.183)</td>
<td>735.450***</td>
</tr>
<tr>
<td></td>
<td>(.000)</td>
<td>(.000)</td>
<td>(.000)</td>
<td>(.000)</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>566.180 (.243)</td>
<td>583.011 (.615)</td>
<td>579.043* (.018)</td>
<td>707.107 (.325)</td>
</tr>
<tr>
<td></td>
<td>583.011 (.243)</td>
<td>579.043* (.018)</td>
<td>707.107 (.325)</td>
<td></td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>577.270***</td>
<td>610.059***</td>
<td>579.285** (.004)</td>
<td>709.463‡ (.052)</td>
</tr>
<tr>
<td></td>
<td>(.001)</td>
<td>(.000)</td>
<td>(.000)</td>
<td>(.000)</td>
</tr>
<tr>
<td><strong>Intercept</strong></td>
<td>557.047***</td>
<td>577.646***</td>
<td>562.081*** (.001)</td>
<td>691.303***</td>
</tr>
<tr>
<td></td>
<td>(.000)</td>
<td>(.000)</td>
<td>(.000)</td>
<td>(.000)</td>
</tr>
<tr>
<td><strong>Pseudo R-Squared</strong></td>
<td>.104</td>
<td>.054</td>
<td>.028</td>
<td>.058</td>
</tr>
<tr>
<td><strong>χ²</strong></td>
<td>168.215***</td>
<td>83.655***</td>
<td>42.622*** (.001)</td>
<td>85.711***</td>
</tr>
<tr>
<td></td>
<td>(.000)</td>
<td>(.000)</td>
<td>(.000)</td>
<td>(.000)</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>1526</td>
<td>1514</td>
<td>1503</td>
<td>1430</td>
</tr>
</tbody>
</table>

***p<.001; **p<.01; *p<.05; ‡p<.1
‘interesting’ (15), ‘memorable’ (4), ‘educational’ (12) and other generalized neutral terms (20).

When the total responses were categorized according to positive, negative, or neutral mentions\textsuperscript{99}, the entirety of responses offered showed a total of 55 positive responses, 95 negative responses, and 141 neutral responses. What this brief but informative assessment may offer is some unique qualitative credence to the power of neutrality as a response to war—arguably, a response vastly overlooked in the literature. Of course, these findings may run into the complex problem noted in the above quantitative analysis of interpreting historical events rather than hypothetical ones—perhaps these feelings about war would not hold in future assessments of hypothetical scenarios. Furthermore, they may more accurately reflect concerns over military-related social stigma in reporting reactions; the gap between civilian interviewers and veteran respondents might have driven the neutral reporting. However, overall, this evidence continues to yield some thought-provoking insights for how we expect veterans to respond—and how they do respond—to traumatic combat experiences.

\textbf{Summary}

Overall, the findings from Study 2 offer a number of interesting insights into the relationship between combat service, dysregulation, and foreign policy preferences, even when using survey instruments that were not explicitly designed for the theory at

\textsuperscript{99} Categorized according to the author’s structured list of possible positive/negative/neutral mentions; responses that did not fall within a category were omitted. Approximately 13 responses were ‘don’t know’ or ‘refused.’
hand and, as such, lacked some of the level of detail yielded by Study 1. Yet, multitudinous lessons emerged for different samples and variables, in different directions and levels of significance. In the context of the overall plausibility probe, what do these highly variant and inconsistent findings suggest?

First, they continue to lend weight to the idea that while combat and dysregulation continue to show a strong association, that collective association does not seem to impact foreign policy in the hypothesized (e.g. neutral) way. However, these results interestingly do not nullify combat-related dysregulation’s overall role entirely; indeed, combat service continued to play significant (if opposite) roles in several of the policy topics at hand. What this suggests is there is some specific threat between combat (which was hypothesized and generally confirmed to be reliably dysregulating) and specific foreign policy preferences that still exists—it just may not be the threat put forward in the theory offered in Section II. Indeed, the comparative civilian results suggest that combat service does exert some complicated influence on foreign policy beliefs—combat service’s impact chips away at the influence of ideology in veterans, but in doing so actually results in minor decreases in models’ overall R-squared—suggesting that combat introduces powerful, but even more complex, associations with the foreign policy outcomes.

However, once again characteristic of this research’s plausibility probe design, a number of sacrifices in the overall survey design led to a number of limitations of the overall study. For instance, the narrowly defined foreign policy variables in this context introduced another significant concern. Recall that in Study 1, multiple foreign policy
questions were amalgamated to a scale specifically assessing aggression and cooperation, and every question was relegated to the hypothetical. In Study 2, only a narrow amount of foreign policy questions were assessed, often on binary scales, on history-specific topics.

Not specific to Study 2’s specific design—indeed, reflected in all of the studies in this dissertation—is the continued limitation of temporally-unbounded questions. There is simply no guarantee that combat service (and combat-related dysregulation) caused the foreign policy beliefs adhered to. The controlled multinomial regressions attempted to offer evidence in favor of/against alternative explanations, but no control here can precisely capture self-selection effects. It is easy to imagine a world in which people enlist in military service specifically because they though Iraq/Afghanistan wars were worth it. Of course, joining the military does not specifically guarantee an individual serves in combat, such that our hypothesis about a unique relationship between combat and foreign policy preferences still holds some credence versus pure self-selection effects; however this limitation remains one of notable concern.
SECTION IV

PART 3

Analysis and Interpretation of Study 3:

A Cross-Sectional Time-Series Analysis of Veterans in Congress

Data for Study 3 was collected via primary source coding of the behavior and attributes of approximately 549 members of the U.S. House of Representatives over the course of the 108th to the 112th Congresses (2003 to 2013) (collected and reproduced by Lupton, 2017). The total number of observations (one per year for each member, based on their length of service) recorded was 1,378 (with data excluded list-wise when appropriate for analysis).100

This data represented a total of 161 Representatives with some prior military service, 50 of whom had prior combat service. The mean length of service for veterans in Congress was a little more than two years of service. Though the total number of Representatives in each major party ebbed and flowed over the course of several sessions, the differential between Democrats and Republicans in each session ranged from roughly 6-16%.

Importantly, recall from the methodology discussion in Section III that Study 3 omits testing of the first hypothesis; the data as collected include no indicators

100 For attribution purposes, it can be assumed that all data for Study 3 is derived from the Lupton (2017) data.
regarding traumatic combat experience exposure such that no definitive link within H1 can be established. However, given the results of the prior two studies—results that reliably showed a strong connection between at least some, if not strong, ANS dysregulation symptoms associated with combat service—Study 3 can cautiously but reasonably proceed under the assumption that the combat variable serves as a proxy for some dysregulation symptomatology. Using this interpretation, the categorical assignment of combat status was evaluated alongside patterns in roll call voting on issues of control over defense policy issues. Specifically, Study 3 assesses how combat impacts two distinct measures of defense policy voting: first, how often a member of the House votes to increase congressional oversight of current troops deployed (either in increasing or decreasing total number deployed), and second, how often a member of the House votes to increase congressional oversight of information about current war operations (Campbell & Auerswald, 2015; Lupton, 2017). Together, these measures serve as close approximations of the conceptual dependent variable: in essence, they evaluate the degree to which a member is asking for more involvement in decision-making (whether that involvement is interventionist or isolationist) against the degree to which a member does not ask to be involved, as a means of testing H2B.

Thus, a series of Mann-Whitney U (MWU) tests were initially applied to measure the overall strength of the relationship between both military service (and specifically combat status) and aggressive policymaking (e.g., seeking more information or more control over troop levels) in a single session of Congress—in this case, the 112th, with cases deleted list-wise where information was missing. The first series of MWU tests
TABLE 3-1. Impact of Veteran and Combat Status on Congressional Voting, 2012.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>N</th>
<th>Mean Rank</th>
<th>Mann-Whitney U</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Info Access</strong></td>
<td>Nonveterans</td>
<td>321</td>
<td>209.87</td>
<td>11918.50</td>
<td>0.025*</td>
</tr>
<tr>
<td></td>
<td>Veterans</td>
<td>86</td>
<td>182.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Troop Levels</strong></td>
<td>Nonveterans</td>
<td>321</td>
<td>208.21</td>
<td>12452.50</td>
<td>0.088‡</td>
</tr>
<tr>
<td></td>
<td>Veterans</td>
<td>86</td>
<td>188.30</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Info Access</strong></td>
<td>No combat experience</td>
<td>379</td>
<td>206.56</td>
<td>4337.50</td>
<td>0.063‡</td>
</tr>
<tr>
<td></td>
<td>Combat experience</td>
<td>28</td>
<td>169.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Troop Levels</strong></td>
<td>No combat experience</td>
<td>379</td>
<td>205.91</td>
<td>4583.00</td>
<td>0.141</td>
</tr>
<tr>
<td></td>
<td>Combat experience</td>
<td>28</td>
<td>178.18</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

***p<.001; **p<.01; *p<.05; ‡p<.1

compared veterans to the rest of Congress in their penchant for more aggressive decision-making in these fields, as replicated in Table 3-1. For voting to increase congressional oversight of information on war operations, the roll call votes for veterans (mean rank = 182.09) were statistically significantly lower than for nonveterans in Congress (mean rank = 209.87; p=.025).101 Meanwhile, when voting to increase congressional oversight of information on troop levels, the roll call vote total for veterans (mean rank = 188.30) was again statistically significantly lower than for nonveterans in Congress (mean rank = 208.21; p=.088).

The MWU tests were then used to assess how combat veterans specifically ranked against any member of Congress who had not served in combat; the results are also printed in Table 3-1. Results show that for voting to increase information oversight,

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101 Note that rank in a MWU context does not indicate a meaningful value of votes, but simple the mean ranking of the group when all legislators were ranked low-high in their voting.
non-combat representatives’ roll call votes (mean rank = 213.65) were statistically significantly higher than combat veterans’ roll call votes (mean rank = 166.41; p=.044). Meanwhile, non-combat representatives’ roll call votes to increase control over troop levels (mean rank = 214.50) were significantly higher than combat veterans’ votes to increase control over troop levels (mean rank = 169.32; p=.041).

Furthermore, per the motivations of the original plausibility probe design, these results were further inspected from within the veteran group. Specifically, MWU tests evaluating the difference between roll call voting by non-combat and combat veterans were conducted, to explore any differentials that might exist among this consistently lower-voting group. Notably, though combat veterans did tend to rank lower than non-combat veterans on mean ranks of roll call voting for both information access and overall troop levels, in neither case did they do so significantly.

Of course, without measures of combat exposure in this instance, Study 3 loses a lot of differentiation from within the combat sample. Indeed, if a separate proxy measure for level of combat exposure—Army service versus other branches—is used to gauge potential trauma exposure, MWU testing shows that Army combat veterans are slightly more likely to vote for increased information access and troop level oversight (as seen in Table 3-2 for a single session of Congress, and Table 3-3 among all Congresses 108th-112th). However, the extremely small number of observations for a single congressional session on these variables unsurprisingly yields large p-values, such that not even tenuous conclusions can be made about level of combat exposure and voting habits.
In sum, it generally appears as though veterans hold some significantly lower control needs on these issues of defense policymaking, but that ‘less aggressive’ oversight does not seem to be mediated by their combat experiences — suggesting that
ANS dysregulation may not be playing an effect on overall decision-making. In other words, this data suggests that the outcome predictions of H2B may be correct, but they cannot be attributable to either combat or combat trauma. However, short of measuring those specific combat experiences, these initial ‘snapshots’ of military service simply do not yield much insight for the theory at hand. Fortunately, a much broader snapshot of congressional voting behavior is available in this panel data, allowing for greater insight into the overall trends of Representatives on the variables of interest. To better understand the impact of veteran status and/or combat veteran status on overall defense policymaking preferences, data collected over time and on potential competing explanations may yield more insight into the overall relationship.

Therefore, this analysis employed a cross-sectional time-series analysis of voting patterns on information access and troop level oversight among the total sample of Representatives for whom data was available. Specifically, these time-series analyses focused on the difference between veteran status as a predictor of voting tendencies and nonveteran status, and on the difference between combat service as a predictor of voting tendencies and no combat service. The results are shown in Table 3-4, and illustrate a number of interesting findings.

Firstly, when compared to nonveterans in Congress, veterans voting for increased oversight on overall war information access showed positive and significant voting behavior over time—suggesting that from 2003 to 2013, being a veteran in Congress made individuals significantly more likely to change (i.e., increase) their aggressiveness on oversight responsibilities. Several other factors—namely, an
**TABLE 3-4. Impact of Veteran and Combat Status on Congressional Voting, Over Time.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Info Access</th>
<th>Info Access</th>
<th>Troop Levels</th>
<th>Troop Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veteran</td>
<td>0.140***</td>
<td></td>
<td>0.159‡</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.007)</td>
<td>(.095)</td>
<td>(-0.082)</td>
<td></td>
</tr>
<tr>
<td>Combat</td>
<td>0.018</td>
<td>(.836)</td>
<td>-0.082</td>
<td></td>
</tr>
<tr>
<td>Party</td>
<td>0.955***</td>
<td>0.940***</td>
<td>2.074***</td>
<td>2.055***</td>
</tr>
<tr>
<td></td>
<td>(.000)</td>
<td>(.000)</td>
<td>(.000)</td>
<td>(.000)</td>
</tr>
<tr>
<td>Gender</td>
<td>0.134‡</td>
<td>0.098</td>
<td>0.251*</td>
<td>0.204‡</td>
</tr>
<tr>
<td></td>
<td>(.061)</td>
<td>(.164)</td>
<td>(.023)</td>
<td>(.059)</td>
</tr>
<tr>
<td>Military District</td>
<td>-0.126*</td>
<td>-0.125*</td>
<td>-0.373***</td>
<td>-0.372***</td>
</tr>
<tr>
<td></td>
<td>(.018)</td>
<td>(.021)</td>
<td>(.000)</td>
<td>(.000)</td>
</tr>
<tr>
<td>Casualty Total</td>
<td>0.114***</td>
<td>0.114***</td>
<td>0.089***</td>
<td>0.089***</td>
</tr>
<tr>
<td></td>
<td>(.000)</td>
<td>(.000)</td>
<td>(.000)</td>
<td>(.000)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.656***</td>
<td>0.701***</td>
<td>-0.028</td>
<td>0.029</td>
</tr>
<tr>
<td></td>
<td>(.000)</td>
<td>(.000)</td>
<td>(.727)</td>
<td>(.699)</td>
</tr>
<tr>
<td>N obs.</td>
<td>1378</td>
<td>1378</td>
<td>1452</td>
<td>1452</td>
</tr>
<tr>
<td>N grps.</td>
<td>549</td>
<td>549</td>
<td>525</td>
<td>525</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.1647</td>
<td>0.1626</td>
<td>0.2767</td>
<td>0.2757</td>
</tr>
</tbody>
</table>

*p-values in parentheses; ***p<.001; **p<.01; *p<.05; ‡p<.1

individual’s party affiliation, gender, whether or not they lived in a military district, the total war casualties for their district—achieved varying levels of significance as well, for an overall model R-squared = .1647. In comparison, combat veterans showed a small magnitude and insignificant likelihood to change their original voting preferences on information access when compared to the rest of Congress, while party affiliation, living in a military district, and total casualties once again served as significant predictors of overall change (with an overall R-squared = .1626).
At the same time, for votes on oversight of overall troop deployments, veterans voting for increased oversight showed positive and weakly significant voting behavior over time, in addition to several other factors showing demonstrably greater significance for overall voting patterns. These results indicate that veteran status does explain some of the change in overall information-seeking over time, though other (arguably more traditional) explanatory factors for voting behavior continue to hold more influence. Interestingly, when members with combat service were evaluated according to these same criteria in their voting for increased oversight of troop levels, their combat service became negative and powerfully insignificant (while the other explanatory factors continued to retain their influence). This is not a mere shift from the weak significance of veteran status; rather, combat service is dramatically less influential (p=.617) than veteran service (p=.095) in predicting any growth in troop level voting over time, and even then its prediction is negatively valenced.

These findings alone highlight several intriguing elements of the theory at hand. Perhaps most importantly, they suggest that veteran service may ‘matter’ for the level of control-seeking in an individual’s voting pattern. Specifically, veteran status seems to motivate less overall control-seeking behavior when compared to those without military service (per the MWU tests), but also that over time during a war, that control-seeking increases among veterans—in enough of a fashion to be considered statistically significant. On the other hand, MWU tests show combat service also motivates less overall control-seeking behavior (possibly except for those with more levels of trauma exposure—though results are clearly inconclusive). Yet, over time, that lower control-
seeking behavior does not change — or if it does, it appears to decrease — for combat veterans relative to the congressional population.

These findings alone suggest that combat service (and presumed subsequent dysregulation) may hold a different and unique effect on aggressive/control-seeking policymaking behavior than being a veteran does. In the context of the hypotheses offered by Section II’s theory, this offers necessary (if not sufficient) support of the hypotheses (particularly H2B) — it suggests that though veterans and combat veterans are both part of a self-selective military institution, there is difference in how these two groups select their defense policy preferences. Specifically, in Study 3 there is some evidence to suggest that difference manifests as less control-seeking on the part of combat veterans, upholding H2B’s specific arguments. However, the most important contribution of Study 3 is the confirmation that the generally underlying mechanisms of H2B – combat service simply altering preferences – are convincingly upheld.102

Furthermore, this finding perfectly illustrates the argument in favor of the probing this theory in the first place, by showing just how much knowledge may be obscured by traditional conceptualizations of veteran service. For instance, some of the prior conclusions published using this data highlight how variables like combat distinctions “are either insignificant or their effects do not differ substantively from the original measure” and thus are not explored in detail (Lupton, 2017, p. 6). Though a factually accurate assessment, in contrast, this dissertation’s analysis shows that the

102 Yet as shown in the tests, these findings are not necessarily attributable to dysregulation itself.
statistical insignificance of combat actually might mean something in and of itself. It may be *conceptually significant* that combat service is *statistically insignificant*, suggesting that there is something about combat service that fundamentally distinguishes it from having the powerful change effect that generalized veteran service has. According to this dissertation, that effect may be a product of the processes hypothesized across H1, H2A and H2B: combat service might reliably make decision-makers more neutral or aversive to extreme policymaking attitudes such that their military service yields no ultimate impact on their decision-making.

**Summary**

Overall, Study 3 provides some illuminating new information to the study of the overall theory and hypotheses connecting combat trauma, ANS dysregulation, and foreign policy preferences. In particular, it offered interesting evidence in favor of hypothesis that combat service ultimately motivates neutral, less-control seeking behaviors among veterans. More convincingly, it reinforced at least the most generalized mechanisms underlying the theory: something about combat service fundamentally distinguishes their policy preferences from those without combat service. Granted, specifically tested within veterans, the differential seems small—but the gap between combat and everyone without combat is simply deeper than the gap between all veterans and everyone without military service. The lessons reviewed above might provide a small contribution to our overall understanding of how combat
affects decision-making—but even that small contribution, particularly by virtue of
upholding some of the themes of the theory, is a worthwhile one.

Yet, Study 3 once again embodies several of the limitations inherent in any
plausibility probe. Central and most damning, the lack of specificity inherent in the
dataset regarding what exact experiences were associated with combat service, and
whether those experiences generated changes in the mind, brain, and body—such that
these changes are responsible for the observed shifts in policymaking, not some other
unknown variable—means any conclusions made from this analysis are necessarily
cautions. Of course, as noted in Section III, there are strong reasons to believe that
even in-depth analyses trying to locate and code these experiences for each legislator
would be fruitless, such that such an analysis for Congress may always be prohibitively
difficult to establish. As such, this particular study proceeded with the confident
associations between combat service and ANS dysregulation symptoms found in
Studies 1 and 2. However, even if this substitution is a necessity, there is no doubt it is
imperfect and means any study of congressional veteran voting patterns will
necessarily fail to satisfy the first part of the theory articulated in Section II.

At the same time, specific to the Study 3 research design, it should be noted that
the time-series analysis is limited to a very narrow set of individuals and window of
time. Though the overall analysis encapsulates ten years, this should not obscure the
fact that data were only collected for specific congressional sessions—meaning that each
unit of the panel analysis held at most five, and due to election turnover at some times
as little as one, data point(s). Of course, it also theoretically does not make sense to
expand this specific study’s window, as this period saw more war-related votes than the non-war and post-war periods that preceded and followed it. In addition, those data points themselves are subject to scrutiny for the low proportion of veterans in Congress (noted throughout this dissertation), and the potential likelihood that a dysregulated individual may not seek office (or is unable to win office) in the first place.

Finally, the original alternative explanations to the overall theory — namely, that in-group social beliefs and learning might color decision-making more than dysregulation — might be vividly on display in Study 3. The viewpoints of veterans in Congress regarding oversight and information might be highly conditioned by their reluctance to micromanage or overregulate the operations of the DoD; in other words, they might simply be more willing to trust the military to undertake operations based on their own prior experience, and may be less willing to exert control in their civilian regulatory capacity. Without more in-depth analysis and inclusion of non-military-related foreign policy topics, such an explanation cannot be ruled out — notably diluting the impact of the theory testing at hand. Furthermore, the aforementioned political and institutional pressures of simply being a member of Congress need to be further elaborated upon, in order to more definitively answer this overarching question about motivations behind this voting behavior.
SECTION IV

Summary

As shown earlier in Section III, any plausibility probe methodology that seeks to mix methods across multiple analyses is virtually guaranteed to offered a tremendous amount of insight into the operations of a particular theory—and indeed, this mixed method multi-analysis did just that.

The first lesson that emerges from this analysis is: combat service is fairly reliably associated with symptoms of ANS dysregulation. This confirmation of H1’s posited linkage is, where possible, validated across the data obtained. Variables coding for the overall presence and severity of dysregulation symptoms, both measured at the interval and ordinal levels, consistently showed a close relationship with either combat experience generally—or in the case of the revolutionary pilot test employed in Study 1, with combat experiences as they increase in frequency. As noted in some of the earlier analysis, the confirmation of this hypothesis may seem relatively obvious—after all, as Section I showed, quantitative data establishing the multitudinous health effects of combat service abounds. However, this multi-analysis confirmation is unique in its specification of ANS dysregulation and its comprehensive, multitudinous health effects. No longer limited to traditional diagnostic conceptualizations of PTSD and depression, or traditional physical diagnoses like asthma or joint pain, this analysis of dysregulation included all of those factors at once—in addition to new analysis of symptoms like spiritual changes. Put simply, this finding may have revealed a common sense
hypothesis, but in doing so it validated a brand new mechanism for analyzing the effects of combat service in military veterans.

The second lesson that emerges from this analysis is: combat service may reliably predict some defense/foreign policy decision-making behavior, but it is not yet clear if that relationship is a product of ANS dysregulation or not. In other words, H2B — the idea that combat reliably predicts less aggressive, more neutral/controlled policy preferences — was upheld by only some of the evidence provided in the studies above, though even then with cautious skepticism that the coded scale assessments of foreign/defense policy preferences would have to be replicated in further samples to prove their validity. Yet perhaps most importantly, available tests of H2A — the idea that combat does so by generating System 2-degrading and System 1-enhancing ANS dysregulation — are less clear. Interpretations of the symptom categories provided in Study 1, as well as the limited symptom options provided in System 2, hinted at the idea that emotionally, behaviorally, and physically motivated symptoms were more powerfully experienced than cognitive or spiritual symptoms, such that the amplification of System 1 could be operating as expected to motivate the limited outcomes on H2B. However, the general lack of reported outcomes on cognitive and spiritual symptoms — associated loosely with System 2 operations — is precarious in its interpretation. While it could be that a degradation in thinking brain processes means individuals noticed fewer symptoms (i.e., the total number of opportunities to record cognitive shifts might decline), it also could be that simple thinking brain decline was
not happening, disproving H2A—which would objectively achieve the same statistical outcome.

Fortunately, the best mixed method multi-analyses will emerge with multiple remaining questions relative to the theory at hand—another quality satisfied by this undertaking. As the three studies considered throughout Section IV show, there are significant limitations and questions that remain in satisfactorily establishing the contribution of Section II’s theory. These limitations and questions derived from the three studies above take the form of two general issues.

The first question that emerges from this analysis is: can Section II’s theory actually be tested? It is an almost laughably blunt assessment of the difficulty in testing this idea, and one that might seem to indicate the theory itself is questionable. Yet, as earlier sections have convincingly shown, this question is not so much an indicator of a poor theory as it is an indicator of this theory’s complexity. None of these three studies figured out how to perfectly derive information about combat trauma, ANS dysregulation symptoms, and foreign policy preferences. In Study 1, the difficulty in either locating a military sample, guaranteeing that sample is uniformly able to accurately identify and explain their responses, or ensuring that respondents are not unethically pushed beyond their window of tolerance meant that the validity and reliability of the sample is questionable. In Study 2, the difficulty getting researchers to ask questions about dysregulation that are more nuanced than ‘do you think you have PTSD,’ as well as the continued resistance of researchers to capture combat as anything more than a binary measure, once again called the validity and reliability of the sample
into question. Finally, in Study 3, the demonstrated difficulty in obtaining enough consistent decision-making information when limited by historical-political periods, in addition to similarly limited assessments of combat experience and dysregulation, showed that once again: the validity and reliability of the study can be questioned. These studies do not suggest that a valid and reliable study cannot possibly be done, but the consistency of challenges across three such varying designs suggests that future research faces a significantly large question that must be answered, before the theory’s questions can be answered: how can we more accurately test this? Existing methods common to political science do not yet provide a convincing answer.

The second question that emerges from this analysis is: does the influence of alternative explanations matter? While each of the studies considered made at least some attempt to consider outside influences—e.g., parental military service in Study 1, political ideology and age in Study 2, and party affiliation and electoral constituencies in Study 3—these control variables need more analysis and specification to truly understand their effects. Specifically, no analysis exists that collects pre-enlistment/pre-commissioning political attitudes, training attitudes, deployment attitudes, postdeployment attitudes, and veteran attitudes. As noted earlier in this dissertation, such a panel is a difficult endeavor in the AVF-era, given the sample size needed to reliably collect enough individuals who ultimately enter military service. Even promising starts like Jost et al. (2017) only evaluate attitudes at the onset of military academy attendance—they do not, therefore, evaluate attitudes prior to deciding upon military service. Though the first step of the post-plausibility probe research program is
better specifying the theory at hand, and the second is better specifying how it might be tested, the third must undoubtedly be considering the ways in which alternative explanations like self-selection compete and cooperate with the theory provided.

Taken together, these lessons and limitations suggest this plausibility probe was successful in its design and implementation; the dissertation effectively and diversely tested a highly complex series of hypotheses, offering the first illumination of how combat, trauma, and policymaking interact. In doing so, it set this research program on its future path. At the same time, it uncovered a number of serious problems in the design and implementation of such a complex series of hypotheses, each of which must be addressed in future iterations.
CONCLUSION

This dissertation began by stating a simple yet puzzling reality: Americans tend to confer an enormous amount of trust and confidence in their military servicemembers, while at the same time conferring an enormous amount of skepticism and worry about the mental health of military servicemembers. Within this confounding overlap, this project sought to specify a theory no one had asked about nor offered: what about the mental health effects of combat might reliably impact political decision-making among servicemembers? Recognizing that these two samples of veterans are theoretically the same, it behooves us to better understand how what we know about military-related stress exposure trickles up—or does not—to the echelons of political preferences and decision-making. Recent efforts to better understand what it is about ANS dysregulation that impacts political decision-making (Renshon et al., 2017; Stanley, 2018) yield interesting lessons, but have not yet engaged with the specific concept of military service. Is it possible that an overlooked feature of that service might be responsible for a unique decision-making outcome among veterans?

I argue it is possible. In fact, I posited a multi-stage theory in which I illustrated how (1) combat service specifically may be likely to motivate ANS dysregulation in servicemembers, and (2) ANS dysregulation in servicemembers may be likely to motivate neutral or aversive foreign/defense policy preferences. Undertaking a plausibility probe of this ground-breaking attempt at a comprehensive theory of combat
and political preferences, I then designed a three-part mixed methods multi-analysis of both small and large samples of veterans and civilians. The findings from those diverse samples, data collection formats, and analyses lending influential support to the theory’s first hypothesis, and mixed—at times contradictory—evidence for the theory’s second hypotheses. As the final section of the investigation explained, the overall analysis offered significant lessons learned, in addition to several important limitations.

Thus, with all of the limitations inherent in this ambitious undertaking, what is this dissertation’s overall value added? If it is unable to definitively prove the process by which service-related dysregulation fundamentally modifies the micro-foundations of decision-making—short of comprehensive access to a large population of entering recruits, active duty servicemembers, and veterans; multiple fMRI machines, skin conductance reactivity data, and other associated biomarkers like measures of neuropeptide-Y levels; more precise conceptualizations of existing variables like foreign policy preferences; higher order statistical methods; and longitudinal data on such questions of dysregulation and preferences for servicemembers who enter foreign policymaking roles later in life—what contribution does it offer?

Of course, the greatest yield this dissertation provides is its exhaustive synthesis of the disparate bodies of research that connect military experiences, the human stress response, and political decision-making. By carefully connecting the dots between these bodies of research, I develop and present a uniquely comprehensive theory that bridges the deep divides between political science and neuro-behavioral science. As noted in earlier discussions of theories of military socialization in Section I, there has been a
long-standing gap in our understanding of what makes military minds ‘different,’ born entirely out of how difficult it is to discern what might be happening in the ‘black box’ of these individuals; the literature more or less gave up on trying to identify what might make them different, and instead accepted that they are. The footnote from Gelpi and Feaver (2002) considering the competing theories of why servicemembers hold the unique preferences they do summed this acceptance up: “In the absence of panel survey data looking at individuals’ attitudes before, during, and after military service, we cannot definitively resolve this debate” (p. 792).

In fact, such a quote reveals not only that mainstream political science has accepted its inability to prove why the military mind is different—it reveals a questionable underlying logic that even if the academy was to prove theories of military decision-making, that large-scale long-term survey data would accomplish such a task. As continually addressed in Section III, survey research for such a nuanced topic has a number of inherent limitations itself—namely, that it completely fails to defend its broad-based assumption that any given human is able to accurately sense, assess, and label their body’s emotional and/or physiological responses to a prompt. In other words, it is not just that political science accepted it may be too difficult to determine what makes the military mind different; it is that it often makes this assumption based on a lack of understanding about how emotions and cognition interact in the brain, mind, and body.

Indeed, this is emphasized repeatedly even among scholars making recent inroads in this complicated hybrid field of neuroscience and political behavior. As
referenced in Section I, there is a complete dearth of research that accurately integrates the lessons of neuroscience and, particularly, stress into foreign policymaking and international relations contexts (Renshon et al., 2017; Stanley, 2018). Even one of the most recent and promising panel studies of military socialization effects neglects the stress and trauma literature (Jost et al., 2017). If any in-roads are to be made in understanding how a unique environment like war or military service might condition and/or predict how a unique subset of decision-makers form and act on their preferences, such a research program requires a significantly larger amount of theoretical integration and development than the literature has currently been willing or able to provide. This dissertation adds a comprehensive piece to that theoretical puzzle—with interesting, if limited, results of its plausibility pilot testing. Though doubts may remain about how best to evaluate the relationship between voluntary military service, ANS dysregulation, and policy preferences, there is no doubt that we know more than ever about the ways in which the military mind is engineered to make specific policy preferences. That lesson—the convincing possible relationship shown between military service and dysregulation—is what can drive this research program forward.

Furthermore, the implications of offering such a highly-developed theoretical foundation extend beyond this specific hypothesis about service-related ANS dysregulation, to call into question a number of existing theories (and tests) related to leaders, war, and the choices we make. Following Byman and Pollack (2001)’s call for increased study of individual leaders, we have a new theoretical frame to apply to
existing profiles of statesmen in international relations. The in-depth analysis by Stanley (2018) of something like Bar-Joseph and McDermott (2008)’s study of military and civilian leaders offers such a glimpse into how the theoretical orientation of nervous system dysregulation opens our eyes to new explanations for policymaking behaviors. Indeed, the authors make a number of observations tying an “extreme level of stress and revealed signs of panic” to “(…unfounded) fear that Israel was under an existential threat” (Bar-Joseph & McDermott, 2008, p. 157; see also Stanley, 2018), and attributing a lack of “dramatic or notable signs of distress” to “high-quality decisions” throughout wartime (Bar-Joseph & McDermott, 2008, p. 164; see also Stanley, 2018). Consider other seminal studies of military leaders using this frame. Would Horowitz et al. (2015)’s study of how leaders make decisions change with more specification of the role of stress? Could Allison (1969)’s seminal study of both Kennedy and Khrushchev’s decision-making in the Cuban Missile Crisis attribute behavior not just to rational calculations, standard operating procedures, or bureaucratic politics, but rather to the stressful nature of the decision and the prior stressful experiences of the individuals making decisions? Do the shifting micro-foundations of decision-making processes that come with dysregulation possibly redefine much of the literature on war?

At the same time, though this dissertation’s direct and indirect theoretical implications are centered on the unique effects of military service, it bears noting that more than ever in fourth generation warfare civilians in conflict zones bear the direct effects of war—such that they are likely exposed to similar stressors as the military population. In this way, the dissertation might redefine existing theories related to
Exposure to acute traumatic experiences like war, epigenetic (i.e., inter-generational) trauma, early childhood trauma, and socially-conditioned repression are all qualities one might reasonably expect to find in many of today’s failed or failing states. Indeed, the prevalence rates of symptomatology estimates for something like PTSD in civilian populations following state violence has ranged from 11-40% (Stammel, Abbing, Heeke, & Knaevelsrud, 2015) to 15-37% (de Jong et al., 2001), while others found PTSD prevalence of 25% (Nickerson et al., 2014), 33% (Hashemian et al., 2006), and 16% (Kohrt et al., 2016) in their samples.

Following the theoretical lessons of this dissertation, it is thus both interesting and reasonable to ask whether or not the theoretical ‘conflict trap’ that failing states often find themselves within may be a product of dysregulated decision-making among civilians and political elites.

Of course, though some of the largest impacts of this dissertation are how its theory may shift how we understand individual leaders’ foreign policy behaviors throughout the academy, perhaps its most important impacts are the practical policymaking questions it raises outside of mainstream political science theory. Though the overall rate of veterans in Congress has steadily declined from year to year, survey evidence suggests the large influx of Iraq and Afghanistan veterans into upper age groups is motivating modest increases in the number of veterans running for public office. In a recent survey of Iraq and Afghanistan veterans, more than 40% of veterans surveyed indicated that they were considering running for office (IAVA, 2017). As such, if this theory were to hold, we might expect to see continued evidence of neutral or
aversive policymaking among congressional votes. Furthermore, recall from the introduction the recent evidence that veterans in the political elite often bring voters towards their opinions—in this way, any dysregulated decision-making may ultimately be shaping American foreign policy from top to bottom.

Additionally, though the entirety of this dissertation has treated the relationship between combat trauma, dysregulation, and policy preferences as a temporally linear process, there is no formal timeline for when dysregulation symptoms unleash their full impact. Though multiple studies considered in the literature review suggested symptoms get stronger with time, none denied the possibility that dysregulation onset is immediate and powerful even for servicemembers still deployed. Indeed, the evidence of the increased length and repetition of tours of duty means it is reasonable to expect that these hypotheses extend to decision-making that may happen in-theater. To be clear, just as articulated in this dissertation’s theory, this argument does not assert that such decision-making is flawed, wrong, or guaranteed; it merely asserts that decision-making may be different.

In fact, such questions have technically been raised before in less obvious ways. For instance, take the case of the former Special Forces commander Jim Gant, a highly regarded officer who made a series of decisions that he deemed appropriate for waging the war in Afghanistan, bucking numerous Army protocols along the way. His knowledge and trust of local communities were consistently praised in the war-fighting effort, and he was so committed to his role that though deployments were typically eight months, Gant remained in combat for two full years. As a result, it was reported
that he experienced increased PTSD and sleeping disorders, and began self-medicating on-the-job with alcohol and sleep/pain medications. After moving into a home with a girlfriend while on duty, he eventually was removed from his position and forced into retirement, with some colleagues praising his work and others suggesting he was “erratic,” and “did not act in a stable manner” (Meek, Schwartz, & Ross, 2014). Another infamous case illustrating this point involved Lt. Col. Tammy Baugh, investigated by the Army for her conduct as the commander of a Fort Carson helicopter battalion (Roeder, 2014). A combat veteran of Iraq and Afghanistan, Lt. Col Baugh received numerous complaints for erupting during her role at Fort Carson, throwing things and storming out of meetings. Yet, unlike the Gant case, Lt. Col. Baugh was not relieved of her duty; the Army’s internal report merely noted her behavior and resumed her command responsibilities (Roeder, 2014). These two stories with different endings illustrate the questions that must be asked about how leadership and decision-making in active-duty military contexts could be evaluated using this newly offered theoretical lens.

Furthermore, while addressing the ethics of war-fighting is well beyond the scope of this dissertation, it is worth noting that risks to overall behavioral decision-making rarely make the cut of true ‘costs of war.’ Physical and mental health (fairly) continue to dominate discussions about what we ask of our servicemembers; but these micro-foundational shifts, as suggested in the theory tested here, may have as much of an impact on their future lives. In that way, this dissertation arrives at a powerful end-point: after asking how the effects of war might affect a servicemember’s interactions
with the political world around them, it now asks whether those costs should be accepted or mitigated, and why.

***

Clearly, the future research implications of this dissertation’s theory are wide-ranging. That said, the future of this research program relies first and foremost on improved specification of the mechanisms at hand in this specific research question. A number of procedural and theoretical steps flowing from this analysis can, and should, be pursued as the next immediate steps in this research program.

The first procedural step is that a series of surveys should be conducted repeatedly testing the new survey instruments introduced in Study 1. The findings for the H1 linkage established by the brand new combat experiences hybrid scale and ANS dysregulation hybrid scale can and must be replicated across different samples of varying composition in order to be reliably institutionalized as a feature of combat veterans’ nervous systems. Granted, similar results were replicated in Study 2, suggesting that the mechanisms themselves may capture a replicable finding. However, particularly unique to the extreme level of precision derived from the PCA of individual symptom groupings, these mechanisms need repeated testing to be assured of their validity in future assessments. This could occur across continued iterations of purposive samples or with appropriate access and funding, broader large-N random sample surveys. Notably, the recent advances in how such symptoms are understood and measured also suggests these measures can not only be retested, but also updated and
refined; for instance, as noted earlier, including more information about past trauma (e.g., ACEs) as indicators of prior dysregulation may yield additional interesting information for additional validation and replication.

The second procedural step is that a greater specification of the measurement of both dysregulation and foreign/defense policy decision-making outcomes is needed. Specific to the foreign policy outcome variables, Section IV emphasized that the variation derived from the ordinal and interval foreign policy scales may be a contributing factor to the variability in models achieving (or in many cases, not achieving) significance. This step toward refining the theory testing may involve simply developing a more diverse scale of hypothetical policy questions, either via an entirely new questionnaire design or a simple response format change (e.g., to feelings thermometers instead of Likert scales). Perhaps most fundamentally, breaking down the individual decision-making components of the foreign policy topics—i.e., focusing on how the mechanisms specified in H2A might impact myopia, risk assessments, confidence, and more—might yield more robust and precise outcomes than looking at the general direction of the foreign policy choices themselves.

At the same time, a greater depth and breadth of specific dysregulation symptom questions may be necessary in order to better capture the overall picture of dysregulation; though the questions designed in Study 1 and utilized in Study 2 yielded interesting findings, there are reasonable critiques to be made about significant overlap among the measures and how they may be more effectively repurposed in the future. Recall that recent authors like Renshon et al. (2017) have made use of physiological
measures of activation arousal like skin conductance reactivity, which could be incorporated as a refined measure of how and/or when dysregulation manifests during policy decision-making.

Indeed, a third procedural step exists in more explicitly undertaking experimental research in which civilians and veterans (and/or active duty) participants are subject to a specific hypothetical foreign policy task or scenario (one designed to be stressful, either in the magnitude and/or the time limits of the crisis). Both the individuals’ choices and their overall performance under the experimental conditions—recorded as qualitative options and/or biomarker data—could then be correlated with the kinds of self-report questions about past trauma and military service involved in this dissertation’s original survey. Though such an experiment may not perfectly be able to mimic the environment of a real foreign policy crisis, it may provide interesting additional insight into the phenomenon articulated throughout this manuscript (and an interesting comparison to Renshon et al. (2017)’s findings).

A related fourth step might be to administer a before-and-after survey of active duty or veteran individuals that—while perhaps unable or unlikely to control for self-selection—would still reveal a more precise window into how trauma experienced within military service shifts after continued stress exposure. As noted, similar work from Jost et al. (2017) shows how this kind of survey can be enacted.

The fifth procedural step is that an in-depth case study process tracing individual leaders is merited. The plausibility probe satisfied its task—showing that something is happening among these variables—and the next reasonable methodology aside from
continued and improved testing is to undertake a series of comprehensive case studies of individuals (either policymakers or individual veterans). The many concerns with this process as noted in Section III will need to be addressed, including how to guarantee individuals are not avoidant of the data collection itself (indeed, one can imagine sitting down for an interview only to be denied any relevant information about an individual’s past combat experiences, let alone be given evidence that an individual denied information during a foreign policy decision). However, even that scenario would contribute yet another interesting outcome to the overall research program, and should be undertaken to gather a robust picture of this phenomenon.

At a theoretical level, the first and perhaps most interesting step might be strengthening our knowledge about the relationship between combat-related dysregulation and policy preferences by shifting the focus from policy preference outcomes to policy preference processes. In other words, recognizing that this dissertation located a possible tenuous link between dysregulation and policy preferences, maybe the more informative outcomes are not avoidance-motivated neutrality but the processes by which neutrality is arrived at: the degree to which an individual fixates on singular options, or oversimplifies complex scenarios.

The second major theoretical step to be taken is: an explicit consideration of what hyper- and hypo-arousal predict in policy decision-making. Though on the whole, the expectation advanced in this dissertation—that increased combat-related dysregulation may lead individuals to avoid reactivation and therefore, avoid complex foreign/defense policy decisions—is still expected to hold true over the majority of
cases, the reality is that when the body cannot successfully avoid triggers and stay within the window of tolerance, it necessarily leaves it. Fully exiting the window of tolerance has already been shown throughout this manuscript to happen faster and easier over time when devoid of re-regulation, and thereby manifests as hyper- or hypo-aroused dysregulation in the process. This outcome might not be as generalizable to the samples considered throughout this dissertation as the avoidance hypothesis, but one can certainly imagine the magnitude of the acute stress in a scenario like the Cuban Missile Crisis taking an individual beyond their window and into the ‘chaos or rigidity’ of dysregulation—indeed, Robert Kennedy himself noted how some individuals were changing their opinions every day, and “because of the pressure of events, even appeared to lose their judgment and stability” (Kennedy, 1969, p. 31).

Of course, as addressed earlier, hypotheses about the effects of hyper- or hypo-arousal on policy decision-making necessarily lose some of their power if we do not yet have a firm sense of when one of these poles is more likely to occur than the other, particularly given how seemingly different their symptomatologies are. If, as Corrigan et al. (2010) suggest, the relationship between the two poles is fluid and constantly changing, it is prohibitively difficult to envision any way of capturing individual variations in policymaking and directly attributing them to these poles. However, with continued research in the field of dysregulation, advances will undoubtedly be made in the years ahead and allow for better specification of this beyond-the-window outcome.
This dissertation began with a simple problem: Americans seem to place more trust in the military at the top because they have combat experience, and Americans seem to place less trust in the military at the bottom because they have combat experience. How, it asked, can we better understand the common experience that unites these two populations? How does combat experience really affect the decision-making of its participants?

Political science, security studies, neuroscience, public policy, and international relations have failed to answer this question, circling its overarching themes across multitudinous bodies of literature but always falling short of connecting the dots. In contrast, this dissertation marked the first comprehensive attempt to connect those disparate, often highly complex data points. It offered an initial theory specifying the relationship that exists between combat, trauma, and overall decision-making. It ran a series of tests designed to broadly exercise the plausibility of that theory. It derived a number of lessons confirming and challenging the theory’s premises, and generated questions about how it could be improved and expanded moving forward. Finally, it considered why any of this matters for theory—or policy.

Combat service may motivate ANS dysregulation, and ANS dysregulation may motivate foreign and defense policy preferences. This power—from both the perspective of the changes war might cause, and what those changes might in turn cause—merits significant further exploration.
APPENDIX: STUDY 1 ORIGINAL SURVEY INSTRUMENT

The following survey was approved by Committee C of the Georgetown University Institutional Review Board (Protocol 2013-1144). It is reprinted in its entirety.

Q1.1 PLEASE READ THE FOLLOWING INFORMED CONSENT FORM. TO PROCEED WITH THE SURVEY, CLICK THE 'NEXT' BUTTON AT THE BOTTOM OF THIS PAGE.

You are invited to participate in a research study titled “The Influence of Combat Experience on U.S. Veterans’ Foreign Policy Attitudes”. This study is being conducted by Kelsey Larsen, Principal Investigator and Ph.D. Candidate at Georgetown University for the examination of the relationship that exists between U.S. veterans’ unique combat experiences and their foreign policy preferences, to be used as quantitative research for a doctoral dissertation. This survey should take around 15 minutes to complete. Participation in this study is entirely voluntary at all times. You can choose not to participate at all or to leave the study at any time. Regardless of your decision, there will be no effect on your relationship with the researcher or any other consequences. You are being asked to take part in this study because you are a U.S. veteran of an armed conflict. If you agree to participate, you will be asked to fill out a survey about your experiences in combat and your perceptions of those experiences. It also includes questions surveying your opinion of general foreign policy issues, as well as basic background questions on your service history and demographic characteristics. The survey will be collected electronically upon your selection of the ‘submit’ button. Some of the questions within the survey will ask you to recall what may be traumatic combat experiences, and to identify symptoms that may be related to specific stress spectrum disorders. If at any time you feel discomfort or the onset of any such symptoms, you should immediately discontinue the survey and seek additional support using the Veterans Crisis Line (Call: 1-800-273-8255 x.1; Text: 838255; Anonymous chat at http://veteranscrisisline.net/), the Combat Call Center (877-WAR-VETS) and State/Local VA Centers for your respective location (877-927-8387 to be connected to specific location, or visit http://www.va.gov/directory/guide/vetcenter_flsh.asp). All of your responses to this survey will remain anonymous and cannot be linked to you in any way. No identifying information about you will be collected at any point during the study, and your survey will be identified only with an assigned ‘Participant Number.’ Once you submit your completed survey, there will be no way to withdraw your responses from the study because the survey contains no identifying information. Study data will be kept in both digital and paper formats in the office of the Principal Investigator. Access to both formats of data will be protected digital data encryption and physically secured hard-drives and files. Only the Principal Investigator will have access to the data. There are no risks associated with this study. While you will not experience any direct benefits from participation, information collected in this study may benefit others in the future by helping to rebuild society’s understanding of what ‘combat experience’ truly means. You will be helping to provide the general public a direct link between combat and its effects on attitudes and behavior by sharing your specific experiences. If you have any questions regarding the survey or this research project in general, please contact the principal investigator, Kelsey Larsen at 202-687-6130 or via email at kll29@georgetown.edu or her faculty advisor, Dr. George Shambaugh, at 202-687-2979 or via email at shambaugh@georgetown.edu. If you have any questions about your rights as a research participant, please contact the Georgetown University IRB at (202) 687-1506 or irboard@georgetown.edu. By completing and submitting this survey, you are indicating your consent to participate in this study. To continue, please click the 'next' button.
Q2.1 Please indicate which of the following items you experienced at any point during your deployment(s).

- I was attacked or ambushed. (1)
- I was shot at or received small-arms fire. (2)
- I saw dead bodies or human remains. (3)
- I saw dead or seriously injured Americans. (4)
- I know someone who was seriously injured or killed. (5)
- I received incoming artillery, rocket, or mortar fire. (6)
- I was responsible for the death of an enemy combatant. (7)
- I was responsible for the death of a noncombatant. (8)
- I handled or uncovered dead bodies or body parts. (9)
- I was wounded or injured. (10)
- I had a close call, was shot or hit but protective gear saved me. (11)
- I had a buddy shot or hit who was near me. (12)
- I was in an accident. (13)
- I was taken hostage. (14)
- I witnessed an accident which resulted in serious injury or death. (15)
- I saved the life of a soldier or civilian. (16)
- I engaged in hand-to-hand combat. (17)
- I aided in the removal of unexploded ordinances. (18)
- I participated in de-mining operations. (19)
- I patrolled or rode in areas where there were landmines. (20)
- I cleared or searched homes/buildings. (21)
- I had hostile reactions from civilians I was trying to help. (22)
- I disarmed civilians. (23)
- I had contact with traumatized civilians. (24)
- I witnessed hostility over property or boundary disputes. (25)
- I witnessed hostility between warring factions. (26)
- I had to exercise restraint while patrolling. (27)
- I saw children or mothers who were victims of conflict. (28)
- I saw children or mothers who I was unable to help. (29)
- I policed or managed civilians in chaotic or unpredictable conditions. (30)
- I saw physical devastation. (31)
- I flew in an aircraft over enemy territory. (32)
- I encountered improvised explosive devices. (33)
- I have never deployed. (34)

If I have never deployed. Is Selected, Then Skip To End of Survey
Q3.1 The following questions will give you the opportunity to tell us more about your reactions following your combat experiences. Please answer openly and honestly. Please assess how severely the following physiological issues affect your daily life:

<table>
<thead>
<tr>
<th>Issue</th>
<th>No effect (1)</th>
<th>Minor effect (2)</th>
<th>Moderate effect (3)</th>
<th>Major effect (4)</th>
<th>Don't Know/No Response (5)</th>
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</thead>
<tbody>
<tr>
<td>Hypervigilance or feeling 'on guard' (1)</td>
<td>○</td>
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<td>Feeling that your life is still threatened (2)</td>
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<td>Feeling violated or unsafe (3)</td>
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<td>Feeling a heightened sense of urgency (4)</td>
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<td>Feeling that your life is in danger (5)</td>
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<td>Experiencing chronic pain (6)</td>
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<td>Feeling weak in your body and/or collapsed in your joints (7)</td>
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<td>Restlessness, i.e. cannot settle (8)</td>
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<td>Heart pounding, racing, or irregularity (9)</td>
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<td>Oversleeping (10)</td>
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<td>Insomnia (11)</td>
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<td>Lethargy, exhaustion, and/or chronic fatigue (12)</td>
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<td>Shakiness (13)</td>
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<td>Hypersensitivity to sound or light (14)</td>
<td>○</td>
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<td>Stomach problems, i.e. upset stomach and knots (15)</td>
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<td>Increased urinary frequency (16)</td>
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<td>Over-eating (17)</td>
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<tr>
<td>Under-eating (18)</td>
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<td>Nausea or vomiting (19)</td>
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<td>Loss of sexual interest (20)</td>
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<td>Having too much energy (hyperactivity) (21)</td>
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<td>Electric or overcharged feeling in your body (22)</td>
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</table>
Q3.2 Please assess how severely the following emotional issues affect your daily life:

<table>
<thead>
<tr>
<th>Emotional Issue</th>
<th>No effect (1)</th>
<th>Minor effect (2)</th>
<th>Moderate effect (3)</th>
<th>Major effect (4)</th>
<th>Don't Know/No Response (5)</th>
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<tbody>
<tr>
<td>Feeling out of control (1)</td>
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<tr>
<td>Extreme emotional shifts (2)</td>
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<td>Rage or anger outbursts (3)</td>
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<td>Feeling overwhelmed (4)</td>
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<td>Panic attacks (5)</td>
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<td>Feeling anxious (6)</td>
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<td>Inability to cope with normal stresses (7)</td>
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<td>Generalized fear or anger, i.e. believing all drivers are unsafe (8)</td>
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<td>Sudden fearfulness for no apparent reason (9)</td>
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<td>Fearlessness of dangerous situations (10)</td>
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<td>Uncontrolled temper (11)</td>
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<td>'Everything's Fine' stance (12)</td>
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<td>Irritability and/or overreacting to things (13)</td>
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<td>Emotional flooding, i.e. unable to control emotions (14)</td>
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<td>Difficult connecting or feeling close to others (15)</td>
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<td>Isolation from people (16)</td>
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<td>Fear of being alone (17)</td>
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<td>Fear of being with others (18)</td>
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<tr>
<td>Startling easy or being 'jumpy' (19)</td>
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<tr>
<td>Having impulses to run away or escape fantasies (20)</td>
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<tr>
<td>Depression (21)</td>
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</tbody>
</table>
Q3.3 Please assess how severely the following cognitive issues affect your daily life:

<table>
<thead>
<tr>
<th>Cognitive Issue</th>
<th>No effect (1)</th>
<th>Minor effect (2)</th>
<th>Moderate effect (3)</th>
<th>Major effect (4)</th>
<th>Don't Know/No Response (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recurring dreams related to traumatic events (1)</td>
<td>○</td>
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<tr>
<td>Intrusive imagery related to traumatic events, i.e. you cannot stop seeing the events (2)</td>
<td>○</td>
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<tr>
<td>Flashbacks that make you feel you are reliving traumatic events (3)</td>
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<tr>
<td>Night terrors or abrupt awakening with intense fear (4)</td>
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<tr>
<td>Obsessive review of traumatic events, i.e. constantly retelling stories (5)</td>
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<tr>
<td>Gaps in memory--especially related to traumatic events (6)</td>
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<tr>
<td>Not remembering aspects of prior traumatic events (7)</td>
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<tr>
<td>Obsessive thinking about prior traumatic events (8)</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Lack of focus/concentration (9)</td>
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<tr>
<td>Disorientation--confused about time, space, and/or direction (10)</td>
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<tr>
<td>Feeling confused or fragmented (11)</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Being easily distracted (12)</td>
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<td>Little or no awareness of choices (13)</td>
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<tr>
<td>Difficulty making decisions (14)</td>
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<tr>
<td>Overcautiousness (15)</td>
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<tr>
<td>Excessive worrying (16)</td>
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<td>Everything seeming burdensome or daunting (17)</td>
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<tr>
<td>Dread or anticipation that future trauma will occur (18)</td>
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</tbody>
</table>
Q3.4 Please assess how severely the following behavioral issues affect your daily life:

<table>
<thead>
<tr>
<th>Issue</th>
<th>No effect (1)</th>
<th>Minor effect (2)</th>
<th>Moderate effect (3)</th>
<th>Major effect (4)</th>
<th>Don't Know/No Response (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desire to hurt self or others (1)</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
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<tr>
<td>Prone to accidents (2)</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
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<tr>
<td>Losing personal items, such as keys, glasses, etc. (3)</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
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<tr>
<td>Trouble keeping track of time and/or being late for appointments (4)</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
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<tr>
<td>Trouble orienting in space, i.e. bumping into things (5)</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
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</tr>
<tr>
<td>Avoidance of triggers/associations of traumatic events, i.e. fear of driving on the highway (6)</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
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<tr>
<td>Disrupted relationships (7)</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
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<tr>
<td>Bonding with others through trauma (8)</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
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<td>Loss of sexual interest (9)</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
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<tr>
<td>Crying easily (10)</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
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<tr>
<td>Inability to cry (11)</td>
<td>⬜</td>
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<tr>
<td>Fear of leaving home or familiar surroundings (12)</td>
<td>⬜</td>
<td>⬜</td>
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<tr>
<td>Loss of creativity (13)</td>
<td>⬜</td>
<td>⬜</td>
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<tr>
<td>Difficult with starting projects (14)</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
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<tr>
<td>Starting many projects and not completing them (15)</td>
<td>⬜</td>
<td>⬜</td>
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<td>⬜</td>
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<tr>
<td>Compulsively rechecking</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
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<tr>
<td>everything you do (16)</td>
<td>Acting out by throwing objects, screaming, hitting/kicking, and/or shouting (17)</td>
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</tbody>
</table>
Q3.5 Please assess how severely the following spiritual issues affect your daily life:

<table>
<thead>
<tr>
<th>Issue</th>
<th>No effect (1)</th>
<th>Minor effect (2)</th>
<th>Moderate effect (3)</th>
<th>Major effect (4)</th>
<th>Don't Know/No Response (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feelings of hopelessness and/or powerlessness (1)</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Feeling frozen, paralyzed, and/or immobile (2)</td>
<td>○</td>
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</tr>
<tr>
<td>Unable to feel the weight of your body and/or feeling outside of yourself (3)</td>
<td>○</td>
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<tr>
<td>Feeling defeated, inadequate, and/or like you cannot do anything (4)</td>
<td>○</td>
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<tr>
<td>Feeling disconnected, lost, and 'not here' (5)</td>
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<tr>
<td>Construction, suppression, and/or feeling shut down (6)</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Disinterest in life (7)</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Alienation and believing no one can understand (8)</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<td>○</td>
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<tr>
<td>No sense of future (9)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
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<tr>
<td>Apathy and no energy for life (10)</td>
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<td>○</td>
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</tr>
</tbody>
</table>
Q4.1 When did you first notice changes in your cognition, emotion, spirituality, physiology, or behavior?

- Before entering the military (1)
- After entering the military but before deployment (7)
- During deployment (2)
- Within one year of completing deployment (3)
- More than a year after completing deployment (4)
- Do not recall (5)
- Never (6)
Q5.1 The following questions will give you the opportunity to tell us more about your views on a number of foreign policy issues. Please answer openly and honestly. Please tell us how strongly you agree or disagree with this statement: It is acceptable to kill one's enemy when fighting for one's country.

- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q5.2 Please tell us how strongly you agree or disagree with this statement: A war must be an act of self-defense in order for it to be moral.

- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q5.3 Please tell us how strongly you agree or disagree with this statement: A moral war must seek to only defeat the enemy's military and not to totally destroy his society.

- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q5.4 Please tell us how strongly you agree or disagree with this statement: When at war, we have a moral duty to punish and totally destroy the enemy.

- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q5.5 Please tell us how strongly you agree or disagree with this statement: It is alright to attack an enemy first, before he becomes strong enough to defeat us.

- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q6.1 Please tell us how strongly you agree or disagree with this statement: While the American form of government may not be perfect, it is the best form of government yet devised.

- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)
Q6.2 Please tell us how strongly you agree or disagree with this statement: The U.S. should be involved in world affairs only to the extent that its military power is needed to maintain international peace and stability.
   - Strongly Agree (1)
   - Agree (2)
   - Neither Agree nor Disagree (3)
   - Disagree (4)
   - Strongly Disagree (5)

Q6.3 Please tell us how strongly you agree or disagree with this statement: The U.S. should not hesitate to intrude upon the domestic affairs of other countries in order to establish and preserve a more democratic world order.
   - Strongly Agree (1)
   - Agree (2)
   - Neither Agree nor Disagree (3)
   - Disagree (4)
   - Strongly Disagree (5)

Q6.4 Please tell us how strongly you agree or disagree with this statement: America's conception of its leadership in the world must be scaled down.
   - Strongly Agree (1)
   - Agree (2)
   - Neither Agree nor Disagree (3)
   - Disagree (4)
   - Strongly Disagree (5)

Q6.5 Generally speaking, how much do you trust the U.S. to act responsibly in the world?
   - Not at all (1)
   - Not very much (2)
   - Somewhat (3)
   - A great deal (4)
   - Do not know/No response (5)

Q7.1 Please tell us how strongly you agree or disagree with the following statement: Other powers are generally expansionist rather than defensive in their foreign policy goals.
   - Strongly Agree (1)
   - Agree (2)
   - Neither Agree nor Disagree (3)
   - Disagree (4)
   - Strongly Disagree (5)

Q7.2 Please tell us how strongly you agree or disagree with this statement: The U.S. should maintain its dominant position as the world's most powerful nation at all costs, even going to the brink of war if necessary.
   - Strongly Agree (1)
   - Agree (2)
   - Neither Agree nor Disagree (3)
   - Disagree (4)
   - Strongly Disagree (5)
Q7.3 Do you think that in dealing with other nations our government should be strong and tough, or understanding and flexible?
- Strong and tough (1)
- Understanding and flexible (2)
- I Don't Know/No response (3)

Q7.4 Do you think that the best way to ensure peace is through military strength, or to sit down with other nations and work out our disagreements?
- Through military strength (1)
- By sitting down with other nations and working out our disagreements (2)
- I Don't Know/No Response (3)

Q7.5 Please tell us how strongly you agree or disagree with this statement: Engaging in noncombat missions like reconstruction and nation-building operations designed to strengthen a country's social, political, and economic institutions are appropriate roles for the U.S. military.
- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q8.1 Please tell us how strongly you agree or disagree with the following statement: Fostering international cooperation to solve common problems, such as food, inflation, and energy is an important foreign policy goal.
- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q8.2 Please tell us how strongly you agree or disagree with this statement: The United States shouldn't worry about world affairs but just concentrate on taking care of problems here at home.
- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q8.3 Which statement comes closest to your position?
- As the sole remaining superpower, the US should continue to be the preeminent world leader in solving international problems. (1)
- The US should do its share in efforts to solve international problems together with other countries. (2)
- The US should withdraw from most efforts to solve international problems. (3)
- Do not know/No response (4)
Q8.4 Please tell us how strongly you agree or disagree with this statement: Governments everywhere are weakening and the world is headed for a long period of fragmentation and disorder.
- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q8.5 Generally speaking, do you think most countries would try to take advantage of the United States if they got the chance, or would they try to be fair?
- They would try to take advantage (1)
- They would try to be fair (2)
- Depends (3)
- Do not know/No response (4)

Q9.1 Please tell us how strongly you agree or disagree with the following statement: Helping to improve the standard of living in less developed countries is an important foreign policy goal.
- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q9.2 Please tell us how strongly you agree or disagree with this statement: Better communication and understanding among people is an effective approach to world peace.
- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q9.3 Please tell us how strongly you agree or disagree with this statement: The U.S. should give economic aid to poorer countries even if it means higher prices at home.
- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q10.1 Considering the situation today at home and abroad, do you think the total amount the United States is spending for defense and military purposes should be increased, kept at present levels, or decreased?
- Increased (1)
- Kept at present levels (2)
- Decreased (3)
- I Don't Know/No Response (4)
Q10.2 Please tell us how strongly you agree or disagree with this statement: There are no major threats to the territorial integrity of the United States and thus substantial cuts can be made in the country’s armed forces.
- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q10.3 Please tell us how strongly you agree or disagree with this statement: Benefits for future generations of soldiers should not be reduced, even if this contributes to budget deficits.
- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q11.1 Please tell us how strongly you agree or disagree with this statement: The U.S. should maintain a permanent military presence in the Middle East.
- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q11.2 Please tell us how strongly you agree or disagree with this statement: Our allies are perfectly capable of defending themselves and they can afford it, thus allowing the U.S. to focus on internal rather than external threats to its well-being.
- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q11.3 Please tell us how strongly you agree or disagree with this statement: Before the U.S. commits combat forces abroad, there must be reasonable assurance of support by the American people.
- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q12.1 Please tell us how strongly you agree or disagree with the following statement: It is better to accept defeat than participate in a nuclear war.
- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)
Q12.2 Please tell us how strongly you agree or disagree with the following statement: It is morally acceptable to threaten the use of nuclear weapons against enemy cities as a way to prevent nuclear attacks against our cities.
- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q12.3 Do you think the U.S. should freeze the production of nuclear weapons on its own, do so only if all other countries agree to nuclear freezes as well, or not freeze the production of nuclear weapons at all?
- Freeze production on its own (1)
- Freeze production only if others do so as well (2)
- Do not freeze production (3)
- I Don't Know/ No Response (4)

Q13.1 Please tell us how strongly you agree or disagree with this statement: The U.S. should be as ready to form economic and diplomatic coalitions to cope with the world's problems as it is to lead military coalitions.
- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q13.2 Please tell us how strongly you agree or disagree with this statement: The U.S. should restrict foreign imports.
- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q13.3 Please tell us how strongly you agree or disagree with this statement: The U.S. should restrict foreign exports.
- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q14.1 Please tell us how strongly you agree or disagree with the following statement: If we do not want other nations to spy on us, we should not spy on them.
- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)
Q14.2 Please tell us how strongly you agree or disagree with the following statement: There is nothing wrong with using the CIA to try and undermine hostile governments.

- Strongly Agree (1)
- Agree (2)
- Neither Agree nor Disagree (3)
- Disagree (4)
- Strongly Disagree (5)

Q14.3 Do you think the United States should investigate possible terrorist threats even if that intrudes on personal privacy, or should it not intrude on personal privacy even if that limits its ability to investigate possible terrorist threats?

- Investigate threats even if it intrudes on privacy (1)
- Not intrude on privacy even if it limits threat investigation (2)
- I Don't Know/No Response (3)

Q15.1 Today, which two of the following do you believe pose the greatest threats to American national security?

- An increase of Chinese military strength relative to that of the United States (1)
- The spread of transnational terrorism (2)
- A growing gap between rich nations and poor nations (3)
- Uncontrolled growth of the world's population (4)
- An inability to solve such domestic problems as unemployment, racial conflict, and crime (5)
- American interventions in conflicts that are none of our business (6)
- An increase of Russian military strength relative to that of the United States (7)

Q16.1 Please indicate your race (mark all that apply):

- White (1)
- Hispanic or Latino (13)
- Black or African American (2)
- American Indian or Alaska Native (3)
- Asian Indian (4)
- Chinese (5)
- Filipino (6)
- Other Asian (for example, Hmong, Laotian, Thai, Pakistani, Cambodian, and so on) (7)
- Native Hawaiian (8)
- Guamanian or Chamorro (9)
- Samoan (10)
- Other Pacific Islander Islander (for example, Fijian, Tongan, and so on) (11)
- Prefer Not to Answer (12)

Q16.2 What is your current marital status?

- Now Married (1)
- Widowed (2)
- Divorced (3)
- Separated (4)
- Never Married (5)
- Civil Commitment or Union (6)
- Prefer Not to Answer (7)

If Divorced Is Selected, Then Skip To Do you have a child or children?
Q16.3 Have you ever divorced?
  ○ Yes (1)
  ○ No (2)

Q16.4 Do you have a child or children?
  ○ Yes (1)
  ○ No (2)

Q16.5 Please indicate your highest level of school completed:
  ○ Less than high school (1)
  ○ High school diploma / GED (2)
  ○ Some college credit (3)
  ○ Associate's degree (for example, AA, AS) (4)
  ○ Bachelor's degree (for example, BA, BS) (5)
  ○ Master's degree (for example, MA, MS, MEng, MEd, MSW, MBA) (6)
  ○ Professional degree beyond a bachelor's degree (for example, MD, DDS, DVM, LLB, JD) (7)
  ○ Doctorate degree (for example, PhD, EdD) (8)

Q16.6 Did one or both of your parents serve in the U.S. military?
  ○ Yes (1)
  ○ No (2)

Q16.7 Please indicate your highest rank thus far obtained:
  ○ Commissioned officer (1)
  ○ Non-commissioned officer (2)
  ○ Warrant officer (3)
  ○ Enlisted person (4)
  ○ I don't know/Prefer not to answer (5)

Q16.8 Please indicate your branch of service (mark all that apply):
  ❑ Army (1)
  ❑ Air Force (2)
  ❑ Navy (3)
  ❑ Marines (4)
  ❑ Coast Guard (5)

Q16.9 Was any of your active duty service completed while serving as a member of the National Guard or Reserve Component?
  ○ Never served on active duty as a member of the National Guard/Reserve Component (1)
  ○ Yes, served on active duty while in the National Guard/Reserves (2)

Q16.10 Did you deploy in support of Operation Enduring Freedom (OEF) or Operation Iraqi Freedom (OIF), and if so how many times?
  ○ Yes, one time (1)
  ○ Yes, two or more times (2)
  ○ No (3)
Q16.11 Please indicate which campaign/conflict era(s) you served during:

- WWII (1941-1946) (1)
- Cold War (1945-1991) (2)
- Korea (1950-1955) (3)
- Vietnam (1961-1975) (4)
- Panama (1989-1990) (6)
- Desert Storm (1990-1991) (7)
- Bosnia/Croatia (1995) (9)
- Iraq/Afghanistan (2001-present) (10)
- Other (11)

Q16.12 Please indicate if you have ever been diagnosed as suffering from the following:

- Post-Traumatic Stress Disorder (PTSD) (1)
- Traumatic Brain Injury (TBI) (2)
- I'm not sure (3)
- I have never been diagnosed with PTSD or TBI (4)

Q16.13 What is your gender?

- Male (1)
- Female (2)
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