

THE REBELLIOUS MIND:  
EXPLAINING WHICH PEOPLE BECOME REBELS

BY

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DISSERTATION

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# Abstract

Conflict scholarship has developed a complex understanding of how socio-economic factors influence the individual choice to join a rebel group, but conflict scholarship also lacks progress an understanding of how an individual's predispositions toward specific behaviors influence this decision. This dissertation investigates which individual predispositions are likely to influence the decision to join a rebel group. In examining these predispositions, I seek to also answer whether the same predispositions are likely to influence the behavior or rebel group members. While the behavioral predispositions are likely to be numerous, I focus on variation in personality traits and specifically on an individual's level of trait aggression. I argue that personality traits are stable predictors of behavior and likely to influence joining behavior by placing personality trait variation in the broader context of the decision to join a rebel group. I find that variation in trait aggression plays an important role in the individual decision to join a rebel group and that trait aggression also influences the way individuals perform in a commonly used rational choice game. Finally, I argue that studying personality traits is important outside the civil war context and find that aggression also predicts which individuals are likely to join a traditional state military. The theoretical and empirical contributions of this project show that conflict participation models that take individual differences seriously better represent the decision making process.

*To my Grandmother – (Mammaw) who passed away while I was writing this dissertation. Without her love and support my education would not have been possible.*

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# Chapter 1

## Introduction

Consider the following hypothetical example. Abdoul, Bouba, and Farag are friends living in Benghazi, Libya in early February 2011. Abdoul, Bouba, and Farag grew up together in the same neighborhood and today, they are all in their early 20s and each is married with children. They come from the same economic class and ethnic group, and share the same religious beliefs. Along with their childhood connections, they are neighbors and business partners, dividing their profits equally. Abdoul, Bouba and Farag all disapprove of Muammar Gaddafi's government, and strongly believe he should be replaced. They also believe that the Libyan people have a right to decide their country's leadership and strongly support transitioning to a more democratic form of government.

Abdoul, Bouba and Farag are just three individuals among many in Benghazi who hold these beliefs, which formed the foundation of the recent revolution in Libya. Despite their shared beliefs, at the beginning of the movement, when protests were just beginning to swell, Abdoul and Bouba decided to join the demonstrations near their neighborhood and Farag decided to remain on the sidelines. Then, after a few more days of protests, the movement transitioned from peaceful demonstrations to violent clashes between Gaddafi loyalists and the burgeoning rebellion. These clashes resulted in deaths on both sides. As the violence began, Abdoul decided to return to his family, joining his friend Farag on the sidelines, while Bouba engaged in the violence and continued to fight for the awakening rebellion. Why did the three friends participate differently in the rebellion when they all faced the same social and economic pressures to participate and they all held

the same beliefs about the rebellion's goal?

Despite all of the characteristics these individuals have in common, there are marked differences in their behavior when it comes to joining the rebellion. Like all human behaviors the decision to participate in political protest and rebellion comes from a confluence of *external* circumstances and events and an individual's *internal* behavioral dispositions. The above story is a simple story and one that is hardly representative of the decision process that individuals use when choosing to join a rebellion, yet this story can perhaps illustrate something about that decision process and civil-war scholarship. If we attempt to apply the current leading models of rebellion participation to the story, we would not end up with an explanation of why Abdoul, Bouba and Farag all made different choices. Instead we might end up with a story of why their wealthier neighbors or their neighbors of a different ethnicity (or religion) made a different choice, but the prominent models in current civil-war research would explain little about the different choices between Abdoul, Bouba, and Farag. This is because the models do a solid job of explaining how the external circumstances and events effect an individual's propensity to participate in a rebellion, but offer nothing about the internal variations affect an individual's propensity to participate.

In this dissertation, I explore the possibility that individual differences in psychological predispositions toward certain actions, like the violent acts of rebel group members, matter in determining which individuals join rebel groups. We all know people who would seemingly be better suited to serve in a rebel group. Perhaps they are more aggressive in everyday activities or enjoy risky actions – i.e. the Boubas of the population. And we all know people who would seemingly be ill-suited to serve in a rebel group. Perhaps they are more timid in their daily interactions and avoid risk whenever possible – i.e. the Farags of the world. Yet, despite the intuition that psychological differences explain

behavior, efforts to use psychology as an explanation of which individuals participate in rebellions is almost non-existent in the literature. Instead explanations focus on ethnicity, religion, education, social environment, age, or wealth. While these certainly influence who participates and who doesn't, it is also clear they provide an incomplete story. A more comprehensive understanding of participation in rebellion requires attention to the internal variation provided by psychology.

## 1.1 Research Question

At the most fundamental level, the question motivating this dissertation is: **why do some people become rebels while others do not?** We know that not everyone who witnesses injustices, hears a rousing speech, or suffers repression chooses to rebel, yet we also know that some individuals do. Furthermore, we know that among all the individuals who think rebellion is a good idea only a subset of them will engage in violent behavior. In the following chapters, I investigate which individuals are more likely to become rebels and why. I explain what makes them systematically different from the rest of the population and why those differences matter for participating in a rebellion. In essence, this project is a first step in answering a foundational question in the study of civil war – *who are rebels?*

This project is designed to show how the different behaviors of individuals like Abdoul, Bouba, and Farag can be explained through psychological differences at the individual level. The starting point of the project, however, was not psychology. Instead the seeds of this project began while reading and watching news coverage of the Arab Spring. The news stories detailed participation in the Egyptian revolution that displaced President Mubarak. These stories explained who was protesting by offering socio-economic characteristics of what was probably the average protester (i.e. young, male, college student,

etc.). But surely not everyone who fits in these categories was protesting, especially considering the relatively large population of Egypt (roughly 82 million people).<sup>1</sup> Therefore, what the news was actually reporting was which social groups were mostly likely to participate and not which individuals within those groups were participating. While Egypt was involved in a protest movement, my interest lies in the more violent collective action of rebellion. Over the next few days, I began thinking about the disconnection on the news and reading about who participated in rebellions and what determined their decisions to rebel. When I arrived at the academic literature, I found the traditional conflict-participation theories explained, again, which socio-economic classes participated but not which individuals. I, therefore, turned to the theories and literature on political participation from American politics for explanations of *individual*-level participation and thought about how to apply this research to the study of rebellion.

Drawing on the political participation literature, the goal of this dissertation is not simply to add another independent variable to already crowded models of rebel participation at the group level, but instead to develop a theoretical basis for explaining the variation in individual-level participation – something we observe during all rebellions. Furthermore, I seek to demonstrate in subsequent chapters that psychological variation in individuals represents an important factor in determining participation and that this variation is important for understanding rebellion participation and rebel behavior.

Building directly on previous work in political participation, psychology, and rebel-focused conflict studies, the argument presented in the subsequent chapters posits that individuals with particular personality traits will be more likely to join a violent political movement, and that those individuals will exhibit systematically different behaviors during

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<sup>1</sup>In fact, only a fraction of the population usually joins rebellions and even less so when events turn violent. For example, before the Syrian Civil War in 2011 there were roughly six million fighting age (15-50) men in Syria and less than 1% (approximately 30,000) joined any of the initial fighting forces (CIA World Fact Book 2010).

and after a conflict. In doing so, I address two related questions: 1) Which psychological traits influence an individual's decision to join a rebel movement?: and 2) Do the individuals who have those traits behave in systematically different ways than those who do not?

Question 1 directly stems from a larger research agenda that goes beyond this dissertation. Therefore, Chapters 2, 3 and 4 of this dissertation provide a first glimpse to the answer by examining only one personality trait – aggression. Simply put, the theory and analysis below only begin to address the question of *who are rebels*, but they also provide a systematic and reproducible approach that I plan on using in future projects. Question 2, however, is intended to clarify why the answer to Question 1 is important for civil-war scholarship and the answer (in Chapter 4) experimentally shows that understanding more about the individuals who choose to join rebellion movements can also inform research on rebel behavior and relevant policy.

## 1.2 Preview of the Argument

If we asked people to explain the differences in behavior among their friends and relatives, they would begin with the obvious features such as age, race, gender, and education. They would then quickly move past such obvious differences and begin referencing basic psychological dispositions as a way to explain their behavior. For example, from the above story, family and friends might note that Farag is smart and sensible while Bouba is a free spirit and adventure seeker. This categorization of pre-behavior dispositions toward certain decisions helps us understand why people make the choices we observe. In addition, we use this information to predict their behavior in future similar situations. In predicting whether each would take a summer trip for example, we could say Bouba is more likely to travel on a whim, while Farag is likely to plan carefully beforehand and

consider costs. The exact same logic can also be applied to understanding why Bouba joined the rebellion and Farag stayed home.

Understanding the relationship between basic behavioral dispositions and observed actions is intuitive and part of everyone's daily interactions with others, but categorizing these dispositions and empirically measuring their predictive abilities is also part of a rigorous research program in psychology. This research program is vast but Funder (2008) presents this logic with a particular clarity: "What people do depends both on who they are – their dispositions such as personality traits – and the situation they are in" (568). The conflict literature has a good grasp on the latter, but knows little about the former. In subsequent chapters, I argue that basic dispositions, specifically those that tend toward aggressive acts, can be used to increase our knowledge about which individuals join a rebel group and explain their observed behaviors (such as, for instance, their behavior during reintegration programs).<sup>2</sup> It is also important to note, however, that civil wars have two or more sides – often scholars call these 'rebel' and 'government' – and that my analysis only explains the behavior of individuals who join rebellions, although Chapter 5 does briefly examine personality and enlistment in the U.S. military.

### 1.3 Contribution of the Dissertation

The problem with understanding which people rebel is nearly identical to understanding the general collective-action problem and to understanding which people participate in other political processes (i.e. voting, protesting, and campaigning). Outside of conflict studies, research has explored political participation for decades and the decision to participate in politics is, perhaps, the most studied behavior in political science. The focus

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<sup>2</sup>The structure of this section is similar to that in Mondak et al. (2010) which outlines a framework for studying personality and political behavior.

of this literature comes from Downs (1957) and the “paradox of turnout”.<sup>3</sup> This paradox, has consumed whole swaths of research agendas and graduate syllabi addressing the individual participation question – similar to Lichbach’s *Rebel’s Dilemma* (1995) on the rebel participation side of things. These studies generally begin with the puzzle of: why, in societies without compulsory participation, do people vote or join political groups? Undoubtedly voting and rebel joining are distinctly different decisions, but each also contains a similar decision structure. Therefore, this literature is relevant to studying rebellion because both contain a similar “free-rider” problem that directs a rational person should neither vote or join a rebel group. The benefits of the outcome of both decisions are shared over the whole group irrespective of participation in the process. The cost, however, are borne by only those who participate.<sup>4</sup> Despite this, we witness both large amounts of voting and substantial joining of rebel groups. In order to account for this inconsistency the political participation research has shifted toward explaining the participation paradox with explanations that focus on different types of actors, especially those who receive some sort of psychological benefits from participation (Hirschman, 1982; Dennis, 1991; Mondak, 2010; Dawes & Fowler, 2009; Fowler, 2006; Fowler, Loewen, Settle & Dawes, 2011; Jankowski, 2007; Dawes, Loewen & Fowler, 2011). In the rebel participation literature, however, that shift has not yet occurred.

Of particular relevance to my dissertation are the books by Hirschman (1982) and Dennis (1991). In these two books the respective authors argue that participants in collective action movements receive “expressive” benefits. These are the benefits participants receive because they enjoy some of the actions undertaken during participating. Hirschman even makes the case that the costs normally attributed to participation should be regarded as

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<sup>3</sup>See Blais (2006) for a good summary of this research.

<sup>4</sup>There are differences between the two decisions in regards to the marginal benefits that one person receives for participating. This is primarily the focus of Lichbach (1995) as individual rebels could benefit from participation in a more substantial way than voters. Several studies, Weinstein (2007) being the most relevant, have shown, however, that benefits from participation are relatively small and rare for the rank-and-file members.

benefits for a subset of people. The main contention of both books is that the motivation behind political activism lies in the special nature of the cost-benefit calculus of those who participate. While it is difficult to fully argue that rebel group participation has such well-defined expressive benefits, it is consistent with my argument that some individuals view the cost of participation as, at least partially, beneficial.

Hirschman (1982) equated taking a free ride when the opportunity to participate exists to declining a delicious meal in favor of a satiation-producing pill. The desire to participate in a burgeoning rebellion on the part of those in Libya and Egypt is obviously inconsistent with arguments that people have to be enticed to participate like Lichbach (1995) and others contend. How and why that participation desire varies across individuals, however, is still unclear. This dissertation is an initial move to clarify that variation. The specific contributions to the collective study of conflict and to those practitioners who are interested in preventing rebellions or ending civil conflicts are detailed in the next few sections.

### **1.3.1 Rational Choice Modelers**

This dissertation is part of a much larger debate about whether human decisions reflect rational-choice models. This debate ranges from individuals making rational choices to organizations as large as states making rational choices. Among many others the debate has been applied to rebellion by Tullock (1971), Muller & Opp (1986), and Opp (1989).

My intent here is not, however, to offer a counter to rational-choice models of rebel joining or to make an argument that joining a rebellion is a non-rational act. Instead what the remaining chapters show is that the decision to fight or not is inconsistent across individuals with similar or even identical social profiles and that personality traits partially explain why some individuals join rebellions. This does not, however, invalidate

rational choice models of participation. Instead, it deepens the understanding of how the individual decision to join a rebellion works and could be used in subsequent work to make the rational choice models more precise or, perhaps, even to allow rational-choice modelers the ability to make predictions about participation that are empirically testable in a laboratory or field setting. If we have the ability to test the cost/benefit calculations that explain rebel joining using well-designed and falsifiable empirical science, instead of simply assuming that all people make such calculations identically, we should use it to sharpen our models. This dissertation provides a step toward that goal. Rosen (2004) offers a similar argument to this on pages 13-17. His argument, however, is largely based on how a single individual may make different decisions given the same situation and varying cognitive functions. My argument differs in that I am less concerned with a single individual's decisions based on cognition and more focused on how two socially similar individuals will make different decisions based on personality variation.

Psychological, biological, and sociological sciences offer students of conflict an insight into the human decision-making process that economic rationality does not, but that understanding is largely absent from models on rebel participation. This dissertation begins to bring those insights into the research on rebellions.

The study of civil war has expended considerable time and effort on both the application of rational-choice models to rebellion formation and to understanding the complex social structures of pre-rebellion societies. Each of these two different, but linked, areas of research are generally discussed as different influences on how rebel-joining decisions are made, but this dichotomy is false. Rational-choice models lack a full account of the source of preference variation, and sociological (or communal) explorations lack an understanding of the individual decision-making process. While none of the theories of rebel participation are wrong, none of them are completely correct either. Rationality exists

and potential rebels are rational actors, but rationality does not exist in the way rational-choice scholars often argue it does. Group socialization also exists but it does not fully explain individual rebel participation. Instead, the source of preferences in rational-choice models are some combination of socialization and biology. Socialization is addressed in theories of rebel participation but biology is not. Understanding the preferences in our models of participation or, more correctly, the variation in the biological source of those preference, is a key component to building a more thorough and accurate understanding of who is likely to actively participate in civil wars.

### **1.3.2 Social Accounts of Participation**

Some important models of rebellion participation assume that individual differences do matter, without fully explaining how or why (see Weinstein (2007) for the best example). Other modes of rebellion participation assume that individuals are all the same or at least that individual tendencies are non-paramount to the discussion. For example, in a well-known and highly regarded article, Omar McDoom (2013) attempts to discover which individuals participated in the Rwandan Genocide and what determined that participation. In the article he shows that there is a highly consistent spatial relationship between those who participated in the genocide and those who did not. This finding comes from data that show participators were highly likely to come from the same households, neighborhoods, and towns. This leads McDoom to conclude that the process of participation is rooted in the social networks of preferences and ideology. McDoom is not the first to argue that a social process explains rebel participation. Cornell & Hartmann (2006), for example, argue that the “thickness” or “thinness” of a social identity relates to participation and Horowitz (1985) places participation firmly on the foot of ethnic socialization.

McDoom (2013) is correct, although only partially so. He argues that, “assuming that

preferences to participate in violence are not genetically transmitted but socially acquired, prolonged and regular contact with family members may influence the formation of shared preferences, attitudes, and beliefs” (p.12). This contention is reasonable given his results, but the most recent findings from evolutionary biology also show high levels of heritability in violent and aggressive tendencies (Blonigen & Krueger, 2007, Farrington, 2007, McDermott et. al., 2007, McDermott et. al., 2009).<sup>5</sup> What McDoom does not consider is that part of his spatial relationship is probably driven by the heritability of the underlying genetically-driven personality traits. This is particularly true given the Rwandan tradition of keeping their land holdings within the family through both inheritance and gifting. Rwandan fathers generally gift a portion of their land to their sons upon marriage with the new family, usually constructing a home quite close to the existing dwellings (De Lame 1996). McDoom’s misappropriation of his findings is a good example of why understanding the internal sources of preferences toward violence and aggression is important for studying collective violence. McDoom’s methodology and models are thoroughly researched and comprehensive, but his interpretation of results are skewed toward a non-biological conclusion because general conflict-studies lack a detailed understanding of preference formation, which is often driven by biological variation in propensities toward attitudes and behaviors.

To paraphrase Kuklinski, Quirk et al. (2000), we live in a complex world that does not resemble the one in which we evolved, and scholars should consider how modern life interacts with a mindset that was created for once-common tasks that no longer resemble tasks of today. Civil-war scholars have spent the past 50 years understanding how the structure of social cleavages and political institutions constrain and incentivize the choices of civil-war actors, but it is now time to recognize that humans are constrained internally as well (Fowler et al., 2011). The argument presented in Chapter 2 and the

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<sup>5</sup>Heritability is discussed in detail in Chapter 2 but briefly stated, heritability is the idea that a trait (behaviorial or not) is, at least partially, transmissible from parent to offspring.

results for Chapters 3, 4 and 5 offer a first step in adding the internal constraints of individuals to our models of rebel participation.

### **1.3.3 Conflict Management and Reintegration**

Understanding more about the different cognitive processes leading individuals to join or not join a rebellion may enable us to better predict when rebellions will happen and better facilitate the movement toward lasting peace when they do happen. We often envision rebellions as a cascading movement that grows in size and capacity until a government response or a particular catalytic incident sparks violence. This view of rebellions may be true but there are often periods of negotiation or talks between parties that attempt to facilitate peace. Sometimes these negotiations are successful and sometimes they are not. As we know from Sawyer & Guetzkow (1965), Sawyer (1966), Hopmann (1996) and several other negotiation scholars, the success or failure of negotiations is, at least partially, dependent on the characteristics of the individual sitting at the table. If the process of joining or leaving a rebellion systematically selects certain types of individuals, then knowing which types of individuals join rebellions could also provide significant information about the conflict management process before, during, and after conflict.

In addition, obtaining lasting peace is difficult following intense civil conflict, and we empirically observe reintegration programs failing at a very high rate. Even after negotiations have been successful the continuation of conflict by small groups of remaining rebels is commonplace in the post-war environment. This remaining subset of fighters are often assigned titles such as 'hardliner' or 'true believer' by the media or 'spoilers' in academic circles (Nilsson, 2008). Understanding a bit more about the psychology of the individuals who make up rebel groups and the subsequent group dynamics can offer novel explanations of why certain individuals refuse to accept ceasefires or renege on peace

agreements made during negotiations. This project illuminates more about the decision-making process of rebels and about the personality traits of those who join. Using these findings to design future research will hopefully also illuminate more about the process of abandoning rebellions and returning to peace. If, as I illustrate in Chapter 4, the traits of individuals who join rebellions also predict characteristics of their negotiation styles, then offers made during actual conflict negotiations could be tailored to account for the likely characteristics of the rebels at the table. Therefore, aiding in rebel reintegration during the post-war phase of conflict.

Ending conflicts, especially civil wars, is more difficult than preventing war. Barbara Walter (2002, Ch.1), for example, argues that successful resolutions in civil wars must undergo a three-step process: 1) initiate negotiations, 2) reach a compromised agreement, and 3) implement the terms of the agreement. Personality variation probably plays an important role in each of these stages but an initial examination of which personality traits are present in civil-war combatants is first necessary. This dissertation is a step towards filling that need.

There are several reasons why ending a civil war is laborious, but implementing the agreement is paramount because implementation is a necessary precursor to peace. Walter's (2002) third stage, however, depends on convincing combatants, through the carrot or the stick, that compromise and demobilization is in their best interest. These carrots and sticks can be presented in many forms – such as deterrence efforts, military and government restructuring efforts, truth commissions and tribunals, and, in some instances, side payments or economic incentives offered by third parties. Each of these approaches depends on the assumption that manipulating the cost and benefits of the offers will affect the actors' willingness to accept or reject reintegration.

These assumptions are generally implicit and untested in the academic literature, however, and it is often unclear whether success or failure of reintegration programs is a result of the offered carrots and sticks. For example, the model of reintegration through economic incentives relies on the degree to which combatants value economic goods. Reintegration advocates implicitly assume that peace will result from giving the combatants a profitable alternative to conflict. Further, they assume that coercing combatants to stop fighting through payments will work much in the same way coercing any behavior through economic incentives does. I do not know the validity of these assumptions, nor does anyone else, but empirically testing the validity begins with a more basic understanding of the actors' preference variation on simple cost-benefit calculations. Perhaps because of a lack of understanding about preference formation, there have been relatively few empirical tests of how people make cost-benefit assessments in situations mirroring those that happen during the reintegration process and even less linking those tests to characteristics found in populations of actual rebel fighters. Some of the few studies that do exist are found on the international side of conflict studies (McDermott, Fowler & Smirnov, 2008; McDermott, Johnson, Cowden & Rosen, 2007; McDermott et al., 2007; Tingley & Wang, 2010; Tingley & Walter, 2011).

We do know, however, that peace is often not achieved because combatants harbor a desire for revenge or a mistrust of their enemy – which interferes with the process (Stedman, 1997; Nilsson, 2008). In addition, we know that distrust can reduce the effectiveness of rebel reintegration efforts (Bueno de Mesquita, 2005; Kydd & Walter, 2006). Chapter 4 below specifically outlines how trait aggression (found to be present in rebels in Chapter 3) affects the way an individual weighs the economic cost and benefits during an experiment. This directly relates high rates of failure in Walter's stage 3 and strongly indicates how personality research can be relevant to both understanding and improving the process of reintegration.

### 1.3.4 Policy Implications

The application of psychology to conflict studies need not stop at the scholarly research door. It has important implications for policy and practitioners as well and it is easy to imagine the potential benefits of understanding the motivations of individuals who join rebellions. Rational choice and economic theories currently carry the greatest influence in policy circles, but that does not have to be the case. Rational choice and economic theories of rebel-joining assume that people will maximize their self-interest, when it is now clear from an abundance of new research that this is not always, and even rarely, the case. People often vary in their ability to endure cost or desire to obtain benefits. Therefore, one of the policy implications of this dissertation lies in its ability to help identify those individuals within a society whose specific personalities place them at a higher tendency to actively engage in rebellion. In addition, it is easy to imagine the potential benefits of a personality-enhanced theory of rebel-group joining. Personality-trait research is sufficiently well-defined to use in conflict studies and becomes more so by the day. Understanding the personality of rebel-group members can generate more precise and more general inferences into how rebels and rebel groups think and act.

My argument also has the potential to inform policy by identifying potential rebels before violence takes place.<sup>6</sup> In doing so this project offers information that policymakers can use to develop strategies that help lower the frequency or intensity of civil conflict on three fronts – which are briefly mentioned here and discussed in detail in Section 6.4. First, by focusing on individual differences in psychology, we can obtain a more accurate picture of the relative risk of rebellion and develop tests that screen those individuals who are most susceptible to recruitment by rebel groups. Second, by researching more about the personality of individuals who have already joined a rebel group, this project can lead policymakers to develop more effective methods of getting individuals to demobilize, and

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<sup>6</sup>Potential ethical concerns of this policy implication are discussed in Chapter 6.

build more successful strategies to aid mediators during peace negotiations. Understanding who are rebels matters because interventions, either pre-rebellion or post-conflict, are more likely to be successful if we have greater knowledge about who the intervention is supposed to be affecting or targeting. Third, if the cognitive biases or other deviations from rationality (addressed in Chapter 4) that push some people toward joining a rebel group result from a misinformation or miscalculation problem then they can be addressed with targeted learning and education programs. If, however, the cognitive biases result from individual differences more deeply rooted in evolutionary differences, then the implications for the prevention or cessation of conflict change. Either way, there are numerous policy implications for the use of personality in populations of potential or actual rebels that this dissertation begins to unlock.<sup>7</sup>

## 1.4 Organization of the Dissertation

The remainder of this dissertation proceeds as follows. In Chapter 2, I develop a theory that addresses the source of these differences (i.e. biology) and defines the differences most likely to play an important role in the decision to rebel. Using this argument, I also show how and where these differences fit within the larger story of transition from a peaceful society to civil war. In addition, I also review the literature on rebel-group formation and discuss how my argument adds to the existing scholarship.

Chapter 2's main argument is based on the theories and findings in the political-participation research on American and European politics. The main contention states that personality-trait variation explains, at least partially, why some individuals choose to support a re-

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<sup>7</sup>I would like to note here I that I do not know at this point exactly how the implications change. It is likely that cognitive biases generated from personality differences are movable but also likely that the process is quite different than simply educating someone on the missing information. This is a question that I plan to address in future work.

bellion using violent methods and others support the rebellion using non-violent methods.

In Chapter 3, I specifically examine whether trait aggression predicts volunteering for a rebel group in the Democratic Republic of Congo (DRC). This chapter also utilizes a unique research design to account for potential problems in studying psychology in a population of former combatants and outlines what those potential problems are for future research. In addition, I test and support a single foundational hypothesis that contents higher-aggressive individuals are more likely to join a rebel group than lower-aggressive individuals.

In Chapter 4, I examine whether trait aggression plays a role in determining variation in a structured economic game using a population of college age subjects at the University of Illinois. This chapter is designed to show that those traits (namely aggression), found in Chapter 3 to be present in rebel group volunteers, also affect the way in which people think about cost and benefits relative to their non-aggressive counterparts. The results indicate that personality variation can inform both predictions on who joins rebel groups and how those individuals are likely to behave. The conclusions of this chapter are, therefore, designed to illustrate that individual-level personality variation can help us understand the behavior of rebels in a manner directly relevant to the existing rational choice framework so often used to study rebel behavior.

In Chapter 5, I turn away from studying civil war and rebellion and instead apply the logic to understanding the relationship between individual psychological variation and joining a traditional military force. In this chapter I examine whether personality trait variation also predicts joining the U.S. military using the familiar and extensive Add Health Dataset.

Finally, in Chapter 6, I summarize my findings, review their theoretical and empirical im-

portance, discuss the role of determinism in this project, examine the ethical concerns of determinism in this project, examine the ethical concerns of this dissertation, and discuss plans for future research on psychology and rebellion.

# Chapter 2

## Theory

### 2.1 Introduction and Overview

Understanding the psychological factors that drive an individual to join a rebel group has important implications for the two fundamental questions of conflict scholars; *why does war occur?* and *how do we make it less frequent?*; because psychology can help fill the links between cause and effect. The way in which people see the world varies widely, and their perspectives and experiences influence their actions. Exploring that decision-making process can help explain rebellion and civil war.

In the past few decades, scholars have created detailed theories and conducted empirical investigations on a range of civil war topics: onset (Gurr,1970; Fearon, 1995; Collier & Hoeffler, 1998; Collier & Hoeffler, 2002), ethnicity (Ellingsen, 2000; Fearon & Laitin, 2003; Toft, 2003; Hale, 2004), rebel rationality (Lichbach, 1995), reoccurrence (Collier, Hoeffler & Rohner, 2009; Mason et al., 2011), and settlement (Mason & Fett, 1996; Walter, 2002; Doyle & Sambanis, 2006). There is, however, a relative lack of research on the actual identity of individual rebels, why those particular individuals chose to rebel, and how that affects rebel behavior. The most direct contribution of the theory detailed below is to start answering those unanswered questions.

The existing stream of research on individual rebel participation stems from Mancur Olson's 1965 challenge to theories of rebellion (Olson, 1965). Olson proposed that rebellion

was too costly a form of participation for individuals to autonomously choose. Therefore, rebellion can only be sustained by means of physical coercion or through select incentives for its earliest participants. From this challenge onward, most scholars interested in rebel participation framed their work around the collective-action problem and focused on understanding how individuals were coerced or convinced to play an active role in rebellion.

Samuel Popkin was among the first to address this problem through transcripts of interviews with Vietnam peasants (Popkin, 1979). These transcripts reveal in great detail that the primary motivation for joining the rebellion was the potential increase in economic security offered by the rebellion. After Popkin, the most compelling and complete work on rebel participation comes from Mark Lichbach (1985, 1996) who painstakingly inventoried dozens of potential private goods that could be offered as incentives by rebel groups. He also outlined how potential rebels could rationalize accepting these select incentives in a wide variety of political situations ranging from protest to civil war.

Next, Jeremy Weinstein's recent work aptly entitled, "Inside Rebellion: The Politics of Insurgent Violence" explains in meticulous detail how four different rebel groups recruited and controlled members, and conducted successful operations using different selective incentives (Weinstein 2007). In his work, Weinstein focuses primarily on how the initial resource allotment available to a burgeoning rebel group largely determines its strategy in recruiting rebels, but he only mentions in passing which individuals choose to join.

These three authors, as well as several others in the field, illustrate how rebel groups manage to recruit and retain members without necessarily needing to resort to physical coercion or incentives. However, this narrative of how groups entice individuals tells only part of the recruitment story.

For example, consider again the population of potential rebels in Libya in early 2011. Popkin's work informs us that the forming rebel organization will offer select incentives to the population to entice participation and overcome Olson's free-rider dilemma.<sup>1</sup> Next, Weinstein's work tells us that the incentives offered to Benghazi's residents will be determined by the particular material resources available to the rebellion leaders. In this case, incentives could include, among others, access to potential oil wealth and political power. Finally, Lichbach's work explains the logic of why it is rational for an individual to accept these incentives and join the rebellion even though that decision includes mortal risk. In doing so, Lichbach details the ways in which individuals receive benefits from participation—or suffer cost for non-participation—and how those forces can have a greater influence than the potentially fatal risks associated with participation. As I explained in Chapter 1, however, not every person in the population of potential rebels in Eastern Libya would welcome the incentives offered by rebel leaders and only some actually joined the group. Understanding who accepts incentives and joins the group as opposed to those who do not is a necessary component for understanding who becomes a rebel and how rebellions work; yet none of the major works on rebel-group participation addresses this specific concern.

An important challenge in researching who joins rebel groups is understanding that not only do external variables such as wealth, ethnicity, religion, and ideology play a role in determining participation, but also that internal variations such as emotion, personality, and experience constitute an inherent part of the decision to join. The unique psychology in most, if not all, individuals dictates how they process information and make decisions. Psychological variation, therefore, offers useful information about the ways in which people reach a decision, and the differences in those decisions.

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<sup>1</sup>In addition to the line of general work on participation in rebellion, several scholars have done selected case studies on single conflicts. Among many others, Mason and Krane (1989) and Wood (2003) examine why individuals participated in El Salvador, Kalyvas and Kocher (2007) in Greece, Scott (1977) in Southeast Asia, and Varags (2008) in Columbia's long-running conflicts.

The remainder of this chapter is broken into four sections. The first explains why studying individuals as well as groups is essential in civil-war research. The second explains why the individual differences important to rebellion exist in the first place. The third section outlines how these individual differences work collectively together in a general model of rebellion participation. Finally, the fourth section explains how this theory fits with the other research on rebel participation.

## 2.2 Why Study Individuals?

One of the most important theoretical and methodological issues in the study of rebellion is whether to use all rebel groups, a single rebel group, the individual rebel, or the acts committed by the rebel group as the unit of analysis. I do not support one level over another because I believe each unit of analysis can tell us something about the behavior of rebel groups. Yet each unit also has important limitations that must be considered. Of these potential units, the least studied and least understood is the rebel herself/himself. This is most likely because scholars follow the pathway of least resistance when studying rebellion – which is to assume away individual variation. Conflict scholars, unlike our American Politics colleagues, have traditionally had limited access to the individuals involved in rebellions and, therefore, focused instead on collecting data of the observable group behavior. A result of this lack of access has been a failure to include the individual level variation created by individual differences in our larger models of rebel group behavior.

The use of genetic, neurological, and psychological analyses are just beginning to filter into civil-conflict research and none of the current theories of rebel-group formation in-

clude an investigation of individual psychological-trait variations.<sup>2</sup> This lack of focus on the rebel is unfortunate because the complexities of human individual behavior cannot be fully understood without exploring all forms of individual variance, including psychology and neurology (Kendler & Baker, 2007). Research on rebels and rebel groups will be incomplete until it takes into account the psychological foundations of human behavior and how those foundations vary across individuals and groups.<sup>3</sup> Individual preferences toward a plethora of important characteristics of rebellion including violence, justice, inequality, and fairness form the basis for both attitudes and behavior and, therefore, are necessary to understanding the observed variation in actions (Hatemi & McDermott 2011). For example, the psychological trait classified as “aggression” can vary widely from one individual to another and has been found to influence an individual’s attitudes and behavior on issues ranging from minor verbal incidents to harmful or even deadly physical attacks. Aggression is one of several personality traits which, when combined, create a subtype of individuals who possess a heightened sensitivity to unpleasant emotional states and a tendency toward disinhibited behavior (Blonigen & Krueger 2007). The following discussion and chapters are intended to first explain how this variation works in the decision to join a rebel group, and then determine if this variation actually exists in rebel-group members.

## 2.3 Why These Individual Differences Exist

In Chapter 1, I introduced the idea that studying the influence of individual differences can help us better understand which individuals rebel. In the remaining sections of this

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<sup>2</sup>Interstate conflict and foreign policy analysis has for a long time used psychology to understand war which is most notably seen in Jervis (1976) and Levy (1992), although that work has fallen, a bit, out of favor in the past few decades.

<sup>3</sup>In this chapter I use the terms psychological individual differences and personality interchangeably, which is explained later in this chapter.

chapter, I offer an argument on how these individual differences affect an individual's propensity to rebel, and in subsequent chapters I offer a test of this argument. In my opinion, my argument and the empirical findings presented make a compelling case, but the story would be incomplete without at least a brief discussion of origins of these individual differences and why they exist. In addition, understanding the source of variance in individual psychological differences is necessary to avoid potential spurious or reverse causality concerns. If in the next few chapters I demonstrate a correlation between certain personality traits and the propensity to join a rebel group, and other behaviors civil-war scholars are concerned with, then I must also offer a reasonable argument that the variance in personality traits is what generates the variance in a joining behavior and not vice-versa. The availability of only cross-sectional survey data and interviews, however, makes it difficult to rule out the possibility of a spurious or reverse causality relationship. Therefore, in this section, I will attempt to make the claims presented in the subsequent chapters more credible by discussing the foundations of individual psychological variation and including the most relevant work on its origins and stability over time.<sup>4</sup>

All politically relevant behaviors, and probably all behaviors, come from a combination of external and internal factors. As Buss (1991, p. 461) writes,

"All observable behavior is the product of mechanisms residing within the organism, combined with environmental and organismic inputs that activate those mechanisms."

Understanding why some individuals participate in rebellion while others do not is, therefore, the process of understanding which external (Buss's environmental) factors and internal factors are relevant to the decision and how those categories of factors interact. A considerable amount of research has explored the external factors of the decision, and I will discuss this in greater detail later in this chapter, but no research that I am aware

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<sup>4</sup>This section and the next are largely drawn from Mondak (2010) and Costa Jr & McCrae (1994).

of has explored the internal factors of the decision to join a rebel group. A substantial amount of research, however, has explored the internal factors of other human decisions, including political ones.

Much of the work on the internal drivers of decisions has focused on the variation of personality traits and the origins of personality. The research on the origins of personality has centered in on most traits, and probably all, being formed from a combination of genetic variation and environmental influences – which is thought to occur early in life. Generally this type of research has made use of studies that compare differences in behaviors between Monozygotic (identical) and Dizygotic (fraternal) twins. A complete discussion of the logic behind these types of studies is beyond the scope of this dissertation, but it is important to note that this research design helps us distinguish between genetic influences and environmental influences in observed behavior.<sup>5</sup> While the evidence that personality has a strong genetic underpinning is overwhelming, the exact amount of the heritability of personality is difficult to estimate. Most research, however, puts the heritability of personality traits (0-1 scale) at a minimum of 0.40 and with most traits being in the 0.60 – 0.70 range (Costa Jr & McCrae, 1994; Bouchard Jr & Loehlin, 2001; McCrae & Costa Jr., 2008; Buss, 2009).<sup>6</sup> With these positive and reliable results, bio-personality research supports the conclusion that a consistent genetic structure accounts for a large portion of the variation in personality. This research is compelling and does a solid job demonstrating that variances in personality are produced by variances in genetics or, stated simply, individual differences in personality are due in large part to

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<sup>5</sup>In addition, it should be noted that the most recent research in this subfield argues that neither genetic nor environmental influences are completely independent as both exert influence on the individual – particularly early in a person's life.

<sup>6</sup>Heritability refers to the impact of genes on an observed behavior within a entire population not an individual. More accurately the statistic refers to the amount of variance between individuals in the trait that is a direct result of genetic differences and not environmental differences (Boomsma, Busjahn & Peltonen 2002). The Heritability statistic ranges from 0 to 1 with larger numbers indicating more heritability and no trait, psychological or physical, is completely heritable. Most genetic researchers consider physical height, which has a heritability of 0.80, as the gold standard which makes the range of personality traits quite compelling.

the individual differences in genetics. It matters little for my argument that personality is genetically based, it does matter greatly, however, that the genetic base of personality implies long-term stability.

Genes are stable; we are born with them and while there is growing evidence that they are expressed at different times and places based on variance in environmental factors, the stability of genes is well-researched and widely known. It logically follows then that if personality traits are largely due to genetic variation, and if genes are stable, then personality should also be stable over time (Costa & McCrae, 1998; Rantanen et al., 2007; Bloeser et al., 2015). Several distinct longitudinal studies have investigated this question. For example, Matthews & Desmond (1998) and Caspi (2000) note that there is little change in personality after adolescence and particularly little following age thirty. Caspi & Silva (1995) report that the personality trait variances measured in three-year-old children and again in those same individuals during adolescence and adulthood has a variance of less than ten percent. This is not to say that a particular individual's personality traits are completely stable over time or over an individual's entire lifespan. Instead, current research in both biology and psychology argues that the variance between individuals is stable over time even if individual levels change through maturation processes. For example, we know anecdotally and empirically that young people are far more likely to engage in risky behavior than older individuals, and we know that some young people are far more likely to engage in risky behavior compared to others in the same age group. What the research on trait stability tells us, however, is that the same individuals who are more risk-prone as youths will also be, with a high probability, the same individuals who take more risk as adults (Trimpop 1994). The levels of risky behavior and the corresponding personality traits may change as we get older but the variance within peer groups does not.

The final discussion for this section focuses on the primary reason why these individual differences exist within the human population: evolution. Evolution is the “fitness-based nonrandom selection of individual differences” (Marsh, Boag & Hicks 2010, 124). In neurosciences and psychology, the configurations and functions of tissue structures, both brain and otherwise, and the differences in these structures are explained via an adaptive approach to understanding the conditions under which the structures developed. Personality trait variation and the corresponding brain configurations are part of these structures.<sup>7</sup>

In political science, the study of personality traits driven by evolutionary forces has also examined the sources of individual differences in cooperative behavior (Cesarini et al., 2009), bargaining, risk, leadership, hierarchy (Hatemi et al., 2009), ideology (Funk et al., 2013), punishment and aggression (McIntyre et al., 2007), and social organization (Eaves & Hatemi, 2008). The evolutionary implications of individual variation that apply to the study of rebellion, however, are not present in the literature except for a few isolated articles (see McDermott, Fowler & Smirnov, (2008) for the best example). The lack of evolution-based participation research in the study of rebellion is, at least partially, a result of accounting for the paradox noted above: why does an individual willingly choose to participate in an action when the cost of participation may be death? In evolutionary terms: why would natural-selection tendencies favor a strategy that could end the individual’s life and, in turn, the ability to reproduce? Rationalists have addressed this problem by reconsidering the cost and benefits faced by the individual (discussed in greater detail in the next two sections). Evolutionary psychologists have addressed this problem by realizing that natural selection adopts strategies that favor greater average survival for current and future generations and thus, an individual may have biological systems that favor death as long as the outcome of that death, again on average, produces

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<sup>7</sup>This evolutionary-based model of individual psychological differences is dominant in the field of psychology but it also has its critics. For a good example of these critics see Pinker (2005), which argues for a more experience-based understanding of individual differences.

greater good for the group – therefore, ensuring a higher survival rate of shared genetic material (Tooby & Cosmides, 1990; Tooby & Cosmides, 1995; Tooby & Cosmides, 1998).

For instance, imagine the long-term survival of groups of people with different distributions of aggressive personality traits which, according to evolutionary theory, has a profound effect on the traits selection. When a low level of conflict exists between groups of early humans, a large number of individuals with a low aggressive personality trait will do better. This favors a large distribution of the low level aggressive trait. In contrast, when a high level of conflict exists between groups of early humans, a large number of individuals with highly aggressive personality traits will do better. This favors a large distribution of the highly aggressive traits. If, however, the variation in levels of conflict between the groups of early humans happens at a much faster rate than the pace of evolution, which is quite likely, then neither group will be able to adapt to the changing environments. Instead, there may be a selective advantage to groups with a specific mixture of high and low aggressive individuals that allows the groups to adapt to changing levels of intergroup conflict, essentially involving a mixture of individuals who are likely to fight when given the opportunity and individuals who are likely to flee when given the opportunity.<sup>8</sup> The central part of this story is quite similar to the argument dubbed ‘parochial altruism’ used to study the cooperativeness toward in-groups and non-cooperativeness towards the out-groups in dozens of articles on evolutionary psychology – see Rusch (2014) for a recent summary of this work and Fowler (2006) for an application in political science.

The goal of the above example and of this section is to explain briefly the origin of psychological individual differences relating to traits present in rebellions. The origin of psychological individual differences, however, matters little for their use in the study of

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<sup>8</sup>This example is similar to the examples for the Darwinitic origins in other personality traits explained by Buss (1991), which established a set of guiding principles for the study of personality trait variation. In addition, very similar arguments are made Bowles (2009) and Puurtinen & Mappes (2009) on evolution, warfare, and trait development.

rebellion – its significance lies simply in understanding that the variations are stable and present in all human populations. For individual differences to be important in understanding *who rebels*, the only factors necessary are that the differences exist, are stable over time, measurable, and meaningful for predicting the choice to join a rebel group. The remainder of this chapter discusses those concerns.

## 2.4 Participation in Rebellion

Many theories of conflict participation help explain the origin of participation in rebellion, but they either predict that everyone in the population or, more correctly, everyone in an activated sub-population, will eventually participate or that no one will (see Gurr (1970), Tullock (1971), Lichbach (1998), and Weinstein (2007)). In reality, however, a portion of potential participants out of the activated sub-population participate, and others do not. Although this may be simply due to a miscalculation of cost and benefits or a problem in understanding the opportunity by those who do not participate, my argument is that there are underlying psychological differences between those who participate and those who do not. The same people who participate in one rebellion would likely have participated in another, given similar context, and those individuals who didn't participate again likely would not do so. Empirically, this argument has some support in the larger political participation literature as both Fowler (2005) and Hauert et al. (2007) find that the individuals in mixed populations who cooperate in one cooperation opportunity are the same ones who cooperate in another, while the same is true of non-cooperators who tend to not cooperate even when given multiple opportunities.<sup>9</sup>

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<sup>9</sup>For an interesting argument on why this mix of cooperators and non-cooperators exists in human populations see Fowler et al. (2011). In this article the authors argue that evolution has produced a stable mixture of individuals with different propensities to feel cost or benefits and, therefore, cooperate as a way to provide social groups with the mixture of both cooperators and non-cooperators that best ensures survival of the group.

In addition to the research on general political participation, a compelling body of evidence has emerged that suggests personality traits correlate highly with human behaviors in general. Violent and aggressive behaviors and an attraction to violence are credible examples of these general behaviors (Blonigen & Krueger, 2007). The majority of personality and violence research has focused on positive relationship between certain personality traits and “personality disorders,” such as sociopathy and psychopathy. Even though these are undoubtedly present in some rebel group members, this type of research is unsuitable for understanding the general relationship between personality and violence (Widiger et al., 1994).

Participation in rebellion is neither universal nor consistent. Some people participate while others do not. This choice can either be driven by a deliberative process that some individuals do not or can not undertake, or from the expression of an underlying psychological trait that some people have and others do not. Some of the aforementioned research on political participation and personality can be extremely useful in helping us understand rebellion through identifying the internal individual differences that operate in tandem with the broader social forces, because these internal differences influence which individuals become rebels and which individuals do not. Thus, I offer in the next section a model of rebel participation that is more complex and, therefore, compelling because it bridges the gap between the research on which groups of people rebel and which individuals within that group join the rebellion.

By conceiving of the population of potential rebels as divided into different types based on their personality profiles, we can better understand how different environmental factors draw specific individuals into participating. My argument focuses on the greater attraction to the actions of rebel groups (violence, aggression, etc.) by some individuals over others. This attraction exists in all similar behaviors, not just rebellion, because their

specific personality traits predispose them toward attraction toward violent and aggressive actions. Or put another way, individuals who are more attracted to join a rebel group would also be more attracted to join any group that contains the potential for violent and aggressive actions.

### 2.4.1 How Individuals Become Rebels

To examine the question of *why some individuals choose to participate in rebel groups and others do not?* I first need to provide a basic model of how rebel groups are formed and the process an individual takes in becoming a member. I need to consider why the short-term, material interest appeals to some individuals, why others have their ethnic, religious, or ideological identities activated by the appeals of rebel leaders. Finally, I need to illustrate how the process of becoming a rebel is affected by both external and internal forces.<sup>10</sup>

Figure 2.1 illustrates the basic process of rebel-group formation. The process generally begins with an exogenous event that can vary widely in form and function. For example, the Syrian civil war, which began in 2011, was either a result of the turmoil created by the larger Arab Spring movement, a result of the repressive Assad regime, or most likely, a result of the interaction of these two factors.<sup>11</sup> Most rebellions begin with an interaction of external and internal forces and rebellion occurs only when some individuals willingly forgo the mortal risks of challenging the status quo and take up arms. This initial action

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<sup>10</sup>In this section I am discussing the process of becoming a rebel in general terms while also understanding that specific conflicts may exclude some of the elements I discuss or highlight others. In a future project, I plan on extending this theory by creating a more nuanced relationship between recruitment strategies, conflict characteristics and personality trait activation.

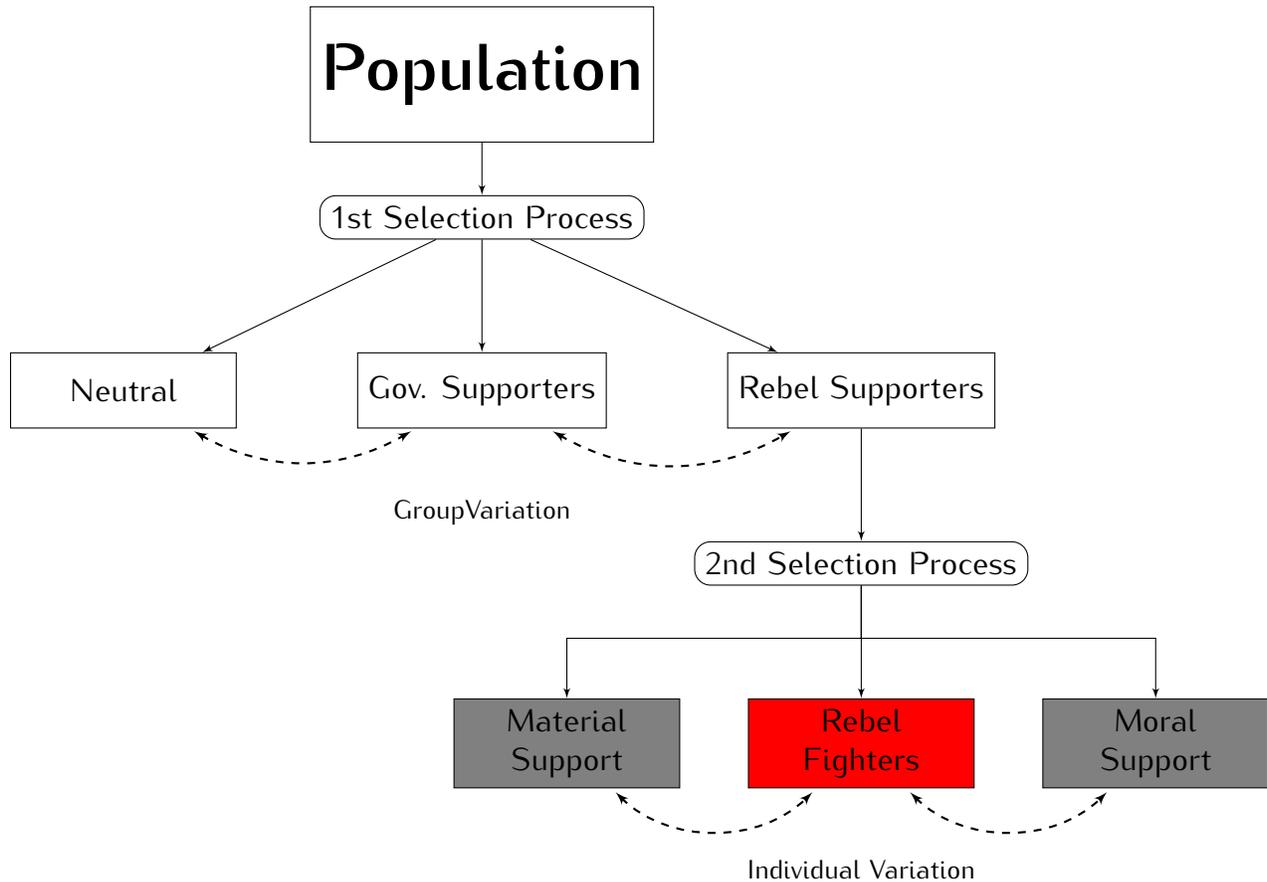
<sup>11</sup>This model is obviously a simplification of the Syrian civil war. The actual division in Syria consisted of multiple rebel groups and their supporters and a mirror image on the government support side. For the purposes of my argument it makes no difference how many groups exist as long as there is a division between the government forces and non-government forces.

is often taken by the future leaders (political or military) of the rebellion and begins the process of social division at the group level (indicated in Figure 2.1 as the 1st Selection Process).

This first selection process is well understood in the civil-war literature and has been the primary focus of rebellion initiation research over the past few decades. For example, we know that the division between rebel-group supporters and government supporters, the first selection process in Figure 2.1, often falls on the fault lines of ethnicity (Horowitz 1985) or income inequality (Muller, 1985; Lichbach, 1989) which result from grievances (Collier & Hoeffler, 2002) created by relative group deprivation (Gurr, 1970). We also know that this process happens at the group level and divides the population into sub-populations based on existing social cleavages.

The second selection process indicated in Figure 2.1 is less understood, although not completely without study. How the second selection process begins and why some individuals take up arms is partially addressed in the conflict literature. For example, we know that rebel groups must first overcome the inherent collective-action problem in forming a group that carries such a heavy individual cost by providing benefits to (or imposing cost on) individuals that make joining more appealing (Lichbach, 1998). We also know that participants in collective violence often share common social networks and tend to have previous contact with other participants (Humphreys and Weinstein, 2008; McDoom, 2013; McDoom, 2014). In addition, Weinstein (2007, 96–126) and Lichbach (1998, 217–226) both argue that participation in rebellion encompasses multiple roles with some individuals becoming sympathizers and only offering moral support to the rebellion. These ‘moral’ supporters may speak positively about the rebels in their homes and workplaces but offer little in the way of material support. Others choose to support the rebellion with material backing – most often via money, food, shelter, or labor. I call these individuals

Figure 2.1: Rebel Group Formation



‘material supporters’. Both of these types of support are displayed in Figure 2.1. These two categories, moral and material support, make up the majority of rebel supporters. The final group of rebel supporters choose, however, to offer their support via a more violent method as actual rebel fighters. These fighters directly engage in conflict on behalf of the rebellion and knowingly choose a method of support that contains violence and aggression.<sup>12</sup> The specific types of support available for individuals can vary from conflict to conflict, often depending on the resource endowment of the area, but all rebel supporters fall into these three main categories: rebel fighters, material support, and moral support. My argument extends the previous work on rebel group formation by addressing which

<sup>12</sup>Weinstein (2007) calls these individuals ‘militants’ but I prefer the term fighters because militants can be misunderstood to include individuals providing logistical support but not actually engaging in combat.

individuals choose to become rebel fighters instead of material or moral supporters after they have already decided to generally support the rebellion.

Understanding which individuals will become rebel fighters and which individuals will not is largely unstudied in the civil-war literature. The existing theories of rebel group participation do a solid job of parsing down the population of potential fighters into increasingly smaller groups: i.e. not the entire population, just the oppressed ethnicity; not the entire ethnic group, just the lower economic classes; and not the entire lower economic class, only the males. Yet, little is ultimately known about which particular individuals within the final subgrouping are likely to join the rebellion because no systematic analysis has ever been performed.

This lack of understanding is evident in the different findings from case studies on rebellion and civil conflicts. For example, in the ethnic militias of Nigeria, Guichaoua (2007) finds that, along with ethnicity, above-average education levels, consistent occupation, and high levels of social connectedness best predict whether a person joined one of the available groups. Humphreys & Weinstein (2008), however, find that the majority of fighters in Sierra Leone (across groups) were uneducated, poor, and generally unemployed (including students). These seemingly divergent findings are not surprising given the differing contexts of two drastically different conflicts. Kalyvas and Kocher (2007), in Greece, and Mason and Krane (1989), in El Salvador, both find that rebel joiners tend to come from regions where violence against civilians occurred because joining an armed group becomes a method to find relatively safety. Another set of studies indicates that ethnic and social identities have been used to reward and sanction free-riders which provides heavy social incentives to participate (Ostrom, 1990; Moore, 1995; Petersen, 2002). Yet, the question of whether there are any consistent joining predictors across all rebel groups is an empirical question that is left unanswered. Without doubt the decision to join a

rebel group is a function of both external factors including conflict context and social demographic characteristics and internal individual psychological variation. To predict joining behavior, however, the research must focus on variables that are constant across all populations but varying within individuals and turn away from variables that vary across populations but effect all individuals.

Lichbach, Weinstein and others have the basic structure of rebel participation correct, but their story is incomplete. Knowing how the process works and why some individuals choose to take up arms does not fully answer the question that has preoccupied scholars of political violence since at least the mid-1960s when Olson (1965) issued his challenge: *why do some individuals choose to join costly rebellions while others do not?* – adding a focus on theories of behavior that deal with variation between individuals will. Personality is just such a variation.

## 2.4.2 Personality

Personality traits have been a central part of the study of individual differences for more than 70 years. Yet the study of personality is barely on the radar screen of conflict research. It is, however, thriving in the work of behavioralists in American and Comparative politics. These scholars seek to explain the same general question as conflict scholars – why individuals and groups of people make specific political decisions – and have turned to personality as a way to understand why some people participate and others do not. International conflict scholars, including George and Smoke (1974), Jervis (1976, 1992), and Huth, Gelpi and Bennett (1992), have regularly considered individual psychology as a source of variation in the propensity to engage in violent behaviors. Levy (1997, 87), for example, argues that in prospect theory,

“people tend to evaluate choices with respect to a reference point, overweigh

losses relative to comparable gains, engage in risk-averse behavior in choices among gains but risk-acceptant behavior in choices among losses, and respond to probabilities in a nonlinear manner.”

This quote and logic easily fits into an understanding of personality differences. Before explaining how personality plays a role in the decision to join a rebel group, I will first define the concept of personality and discuss its general role in decision making. Personality is on the surface a seemingly easy concept to define but, after diving deeper, it can become quite complex. To simplify the process, I prefer to think about the concept outside the realm of academia. If a random person, who has no knowledge about the academic research on personality, is asked to describe someone’s “personality” she would most likely give a list of behaviors that he or she exhibits: honesty, caring, nice, easy-going, fun-loving, hot-headed, or quick-tempered to name a few. Psychologists use different words like extraversion, aggression, threat-perception and conscientiousness to more precisely measure trait structures, but the basic concept of understanding a person’s behaviors via a list of traits remains the same.

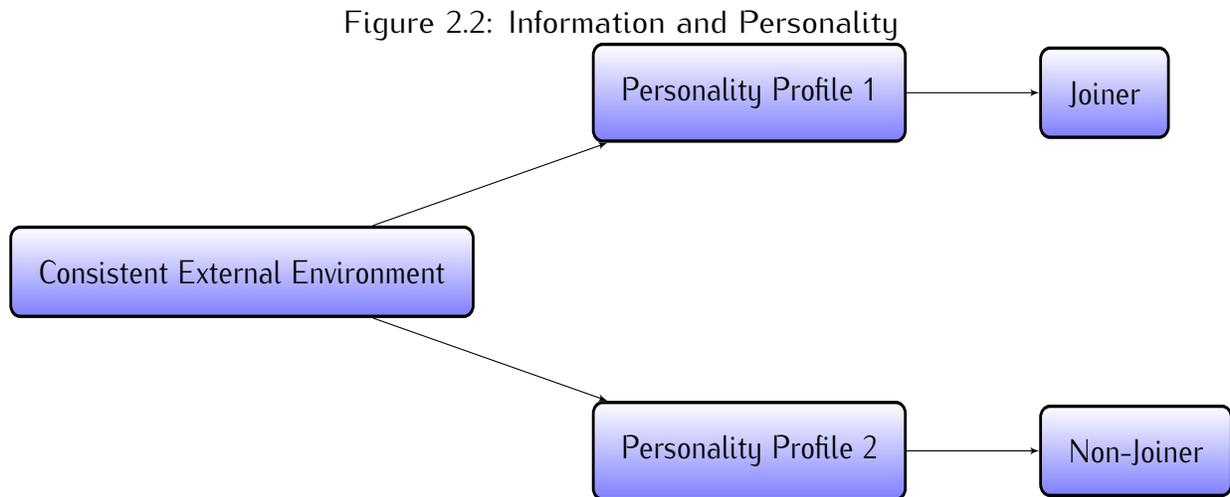
The exact definition of personality varies quite a bit but most psychologists define a person’s personality somewhere in the realm of ‘a set of traits which define a person’s consistent and expected behavior in most situations’ (Boyle, 2010). Using this definition, we can give the concept a few important characteristics: 1) personality is not absolute and cannot predict a person’s behavior in every situation; 2) personality can be used as a tool to understand the variation in behavior between individuals especially in the aggregate; and 3) if personality predicts the way an individual is expected to behave, then personality can be used, post-hoc, to answer the question of why a person behaved in a particular way or why a person joined a rebel group (Mondak, 2010). In essence, personality traits represent a latent construct that can explain why individuals repeatedly exhibit similar behaviors.

The measurement of personality has stimulated much controversy over the past fifty years but the dominant approach used by most psychologists is called the nomothetic model. In this model, personality traits are assumed to moderate situational variables on behavior through an information process separate from ability or motivational influences. In psychology, the notion that personality traits affect an individual's behavior in general and when faced with specific situations is so widely accepted that the current debates revolve around measurement and methodology used in research designs and not around the role of personality itself (Boyle, 2010, p.14-17).

The *how* in the casual chain between personality traits and observed behavior is executed because personality traits are believed to filter differing incoming stimuli into preordained categories of action. For example, one may simplify the brain into two functions, 'physical aggression' and 'all other responses', and run an experiment in which two different individuals, a high-aggressive trait individual and a low-aggressive trait individual, are given ten different identical information stimuli. The high-aggressive trait person would be expected to filter more of the stimuli into the 'physical aggression' category while a low-aggressive trait person may filter only a few or none of the stimuli into that category (this process is fully addressed in Chapter 3). Using this model of understanding personality, we can conceptualize personality in a very literal sense.

Personality is the group of brain structures through which all incoming information is filtered (Allport, 1961). As Figure 2.2 illustrates, when all external variables are consistent, then personality determines the variation in individual behavior because it directly affects the interpretation of the external environment. Personality indicates an individual's behavioral tendencies in differing environments because it shapes how all external information is processed. Whether the behavior is voting, joining a political campaign,

attending college, or joining a rebel group, an individual's personality is a good predictor of his likely behavior, especially in the aggregate and when compared to other people, because, as Figure 2.2 illustrates, personality traits provide variation when external environment does not.

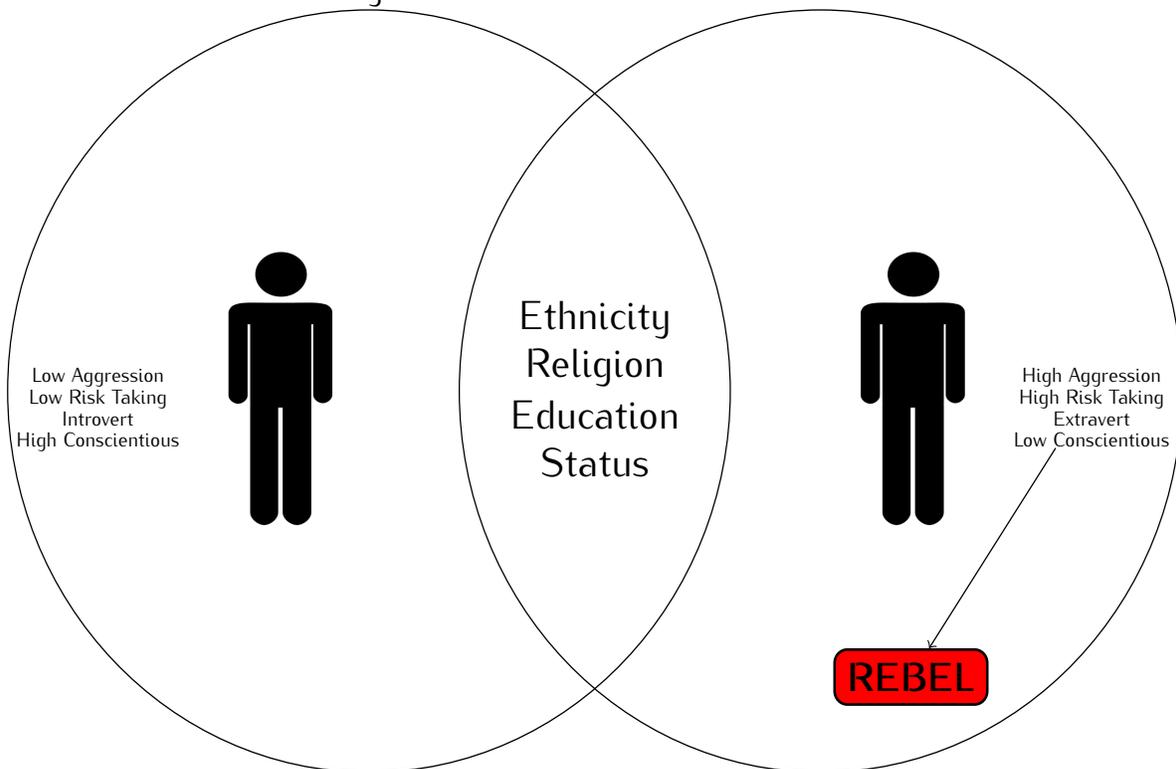


### 2.4.3 Personality and Joining a Rebel Group

The underlying foundation of this project is that human behavior should be explained by both internal and external factors. It is critical, therefore, to understand that personality variation does not “determine” behavior or have any type of “deterministic” component. Instead, personality provides variation in the basic probability that an individual will have the neurological inclinations toward the types of actions that rebel groups normally perform – violence, looting, or just general warfare. Personality has an impact on the probability of an individual joining a rebel group simply because personality affects all human behaviors. For example, individuals clearly differ in their propensity to engage in violent or risky actions and a large portion of this effect has been shown to trace to variation in personality (Blonigen & Krueger, 2007). The effect of personality on the

probability of an individual joining a rebel group stems from its effect on the individual's willingness to engage in violent actions, willingness to engage in risky behavior, or reaction to threat. Although the careful operationalization of personality variation is necessary for applying the concept to conflict, it also remains as critical to the study of rebellion as it does to study of any human behavior. For example, Figure 2.3 illustrates that if two randomly drawn individuals from a country with a burgeoning rebellion were compared and found to have the same external influences on their probability of joining the rebellion (i.e. religion, ethnicity, socio-economic status, etc.) then explanation would have to rely on internal differences between them (i.e. personality).

Figure 2.3: Rebel Member Selection



To determine which of the individuals illustrated in Figure 2.3 is more likely to rebel, one important element is necessary. We need to first determine which traits are likely to play a major role in the choice to join a rebel group. To accomplish the first task I examined

the psychology literature on trait definition, trait measurement, and the process of joining a rebel group. Rebellion and forming a rebel group are examples of collective action and, as with all voluntary collective actions, individuals decide whether to participate.<sup>13</sup> This choice, however, is at the extreme of the collective-action spectrum as participation comes with both the real potential of mortal risk and a high likelihood of committing acts of violence. Therefore, the personality traits that regulate an individual's participation in a rebellion are likely those that are attuned to the individual's perception of risk and acceptance of violence.<sup>14</sup> Based on research in psychology, the personality traits most likely active in the decision to join a rebel group are 1) aggression (discussed in Chapter 3), 2) risk-taking (post-dissertation work), and 3) threat-perception (post-dissertation work). A full model of the effect of personality on rebellion joining should also include the Five-Factor Model (or Big-5 traits) as it has been shown to account for a large portion of personality in general behaviors (also post-dissertation work). Predicting which members of an activated sub-population are likely to join a rebel group is a function of all three of these traits and the Big-5. The remainder of this dissertation, however, will primarily discuss aggression and its role in the decision process.

Above I argue that personality traits develop early in life and are remarkably stable. Therefore, personality traits are formed before most potential rebels become exposed to the context of any given rebellion. As a consequence, the impact of personality on the likelihood of joining a rebellion must be indirect - that is, personality acts to influence the probability joining a rebel group by increasing general attitudes toward engaging in violence or taking risky actions, which themselves directly affect the decision to join. There is no "rebellious personality" or "rebellious personality trait" that predicts the probability

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<sup>13</sup>See Lopez (2012, p. 75-85) for a similar argument on the formation of all collective violence groups.

<sup>14</sup>An extension of this argument that I plan on addressing in subsequent research is that, *ceteris paribus*, as rebel groups grow larger they also become less risky on a per-individual level. This means that the early joiners are more risk-accepting than later joiners and I would, therefore, expect different levels or different traits in early versus late joiners.

of joining. Instead there are stable traits that directly affect the acceptance of the type of behaviors a potential rebel can logically assume he or she will have to undertake. From this perspective, my argument is that personality traits such as aggression, risk-taking, threat perception and the Big-5 can be construed as the primary but distant variables which shape, together with conflict context, the proximal attitudes that predict joining behavior.

## 2.5 Conclusion

The main argument of the theory presented above is that personality traits influence the variation in who chooses to join rebel groups because they affect propensities toward violent and aggressive behaviors. Individuals who have higher aggression traits, high risk-taking propensities, and salient threat-perception traits will be more likely to join a rebel group than individuals who do not. I now turn to providing a more direct method of behavior determination and empirically evaluating the argument presented here. In the next chapter, I explore the direct relationship between the personality trait of aggression and the choice to join a rebel group using data from multiple rebel groups in the Great Lakes Region of Africa. Chapter 4 will explore the relationship between different levels of aggression and cognition processing styles. In Chapter 5, I diverge from testing rebel-group joining behaviors and test the relationship between personality traits and joining traditional state militaries. In each of these chapters, I offer specific testable hypotheses derived from the above discussion and provide supportive evidence.

# Chapter 3

## Aggression and Rebellion

Violence and aggression often go hand in hand with rebellion. A central element of the effort to understand rebellion and the effort to prevent and reduce incidences of violence during rebellion is to understand the factors that contribute to individual differences in the propensity to be violent or aggressive. The individual differences in involvement in violent behaviors have long been identified and studied. Propensities for greater involvement in physically aggressive behaviors by some individuals have been found in multiple studies (for gender differences see Connor et al., (2003), for differences in children see Guerra, Huesmann, & Spindler (2003) and Schwartz & Proctor (2000), for differences in adults see Shaver & Mikulincer (2011)). In addition, aggression has been found to be a consistent within individuals when comparing behaviors from childhood to adolescence (Frick & White, 2008; Connor, 2012), and comparing behaviors from childhood to adulthood (Huesmann et al. 1984; Huesmann & Eron 1989; Piquero et al., 2012). Finally, high-aggression personality traits have been shown to be a strong predictor of differences in support for state violence (Kalmoe 2013).

### 3.1 What is Trait Aggression?

Aggression itself refers to a behavior toward another person carried out with the immediate intention of inflicting harm (Anderson & Bushman 2002). Violence, as described by psychologists, generally refers to the most severe types of aggression and can, therefore,

be thought of as a sub-category of aggression, i.e. all types of violent acts are aggressive but not all aggressive acts are violent. The variations in aggression from one individual to the next depends on: how an individual perceives his or her environment and the threats within; expectations on how an individual will respond to situations; and the individual's belief of his or her own abilities to respond to situations (DeWall, Anderson & Bushman, 2011).

Trait aggression is the measure of psychological differences in aggressive behavior in normal routine interactions. These interactions can range from increased propensities to engage in verbal arguments to increased propensities for physical violence. Trait aggression, like all personality traits, has a diverse set of social and biological origins. These origins influence and individual's level of trait aggression and independently and by interacting with each other which produces an individual varying level of aggression that is both stable and measurable. The influences include genetic predispositions (Coccaro et al., 1997; Caspi et al., 2002; McIntyre et al. 2007; McDermott et. al. 2009), childhood trauma (Caspi, et al. 2002, Farrington 2007), and exposure to high levels of violence as a child without directly experiencing physical trauma (Tooby & Cosmides, 1995; Bushman & Huesmann, 2006).

Trait aggression is, quite obviously, not a comprehensive measure of personality. It is simply one trait among dozens, if not hundreds, of personality traits that each individual possesses and does not capture all the variation in human personality. What trait aggression offers, however, is a relatively narrow measure of a particularly relevant trait. While the dominant paradigm currently used by psychologist to measure personality is the 'Big Five Model', the broad abstraction of this model is complemented by the addition of a trait theorized to be relevant to the particular decision being observed.<sup>1</sup>

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<sup>1</sup>In future work, see section 6.4, I plan on utilizing the Big Five model and several additional traits.

By understanding trait aggression, researchers have explained both within-person and situation-specific stability in aggression because people behave similarly when faced with similar events over time. Trait aggression also helps explain variation in judgments regarding the cost and benefits of behavioral options, identifying and classification of potential threats, and how beliefs about specific groups (i.e. opposing ethnic groups within a country or differing parties engaging in international conflicts) guide an individual's behavior during the decision-making process (DeWall, Anderson & Bushman, 2011).

Using trait aggression to better understand an individual's decision to join a rebel group requires an understanding of the process that trait aggression plays in this decision. Figure 3.1 below outlines a simplified model of the decision process individuals go through when deciding to join a rebel group. Inputs are the social factors and experiences that directly effect each person's unique decision-making process. These inputs can be categorized as part of the personal experiences of each person and the specific conflict contexts. The personal experiences include *all* the relevant history a person brings to the decision, such as past experiences with violence in general, attitudes toward and experiences with the potential targets of the rebel group, the decision maker's age and family structure (i.e. whether the person is the primary provider), levels of self-efficacy, and cognition abilities.<sup>2</sup> Conflict context inputs are the relevant features of the situation in which the rebel group is forming.<sup>3</sup> These can include a range of variables including potential size of the rebel group, access to weaponry, repression or provocation by the rebel group's enemies, local economic opportunities, and threats or incentives offered by the group. The personal and conflict context are not necessarily mutually exclusive but are relatively

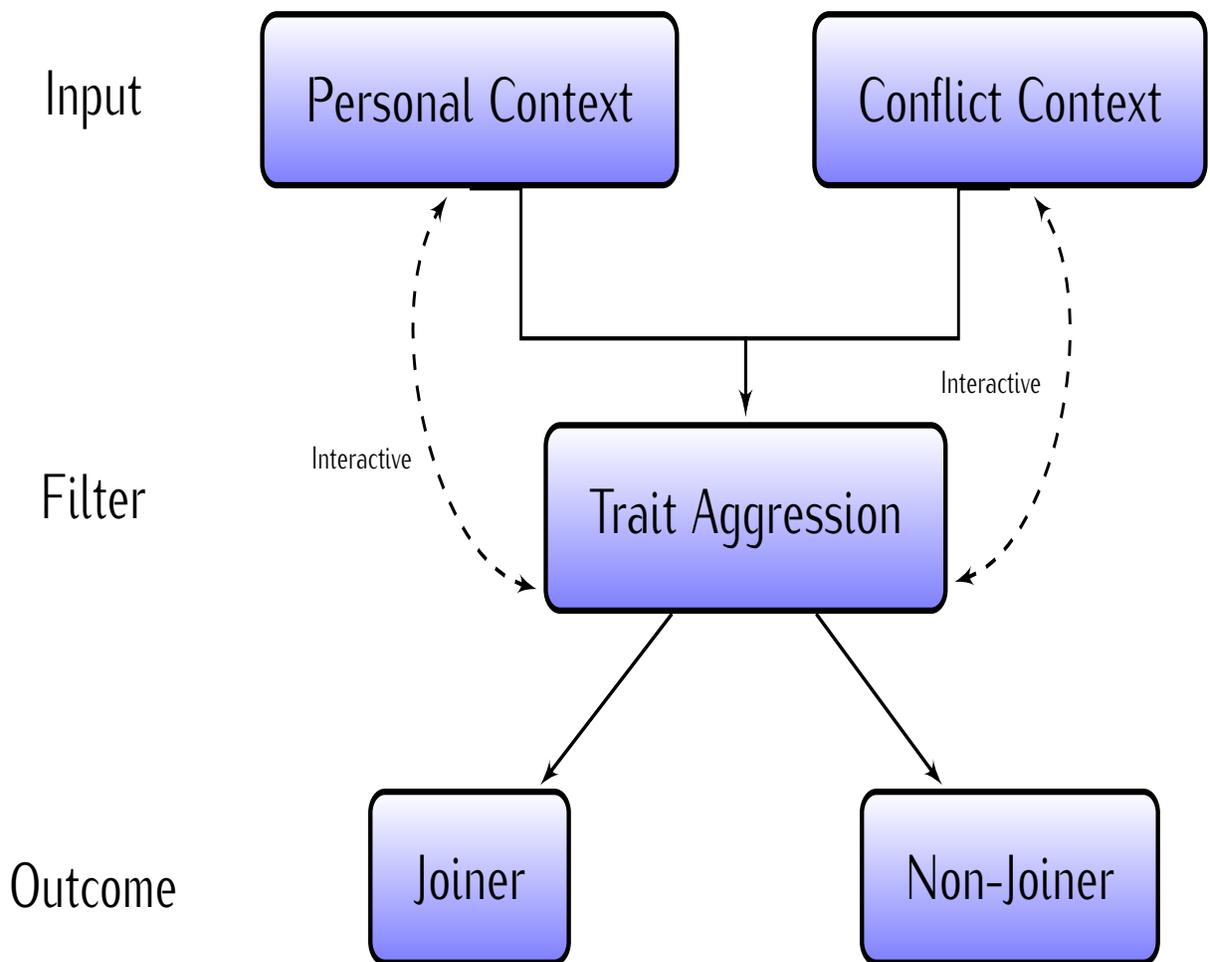
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<sup>2</sup>This list is hardly exhaustive and can contain an almost endless number of variables.

<sup>3</sup>Note that the conflict context node in Figure 3.1 references the current environment surrounding the developing rebel group. This is not the same as the environmental factors that affect personality trait formation because personality traits are generally solidified in childhood while joining a rebel group happens at least during adolescence and usually years later.

independent. Some personal factors can be heightened by the conflict context and some conflict factors maybe the result of an aggregation of personal factors. For example, a lack of economic opportunities caused by government repression is more acute for individuals who are the primary provider of income for their family, and repression by the rebel group's enemy can produce strong personal negative attitudes in those who suffered most.

Figure 3.1: Joining Decision Process



All input variables influence the decision to join a rebel group through the filter of each person's personality, as indicated by 'Trait Aggression' in Figure 3.1. For instance, and *ceteris paribus*, individuals with high levels of trait aggression are more likely to feel that

violence is the correct response after they have suffered repression (personal input) when compared to individuals with low levels of trait aggression. This is because the attraction to violence is greater for individuals with high-trait aggression than for individuals with low-trait aggression in all situations. Or, again *ceteris paribus*, individuals with high levels of trait aggression may be more attracted to the opportunity to use weapons (conflict context input) than individuals with low levels of trait aggression, again because high-trait aggressive individuals act and feel more aggressively – often automatically and without awareness – when compared to low-trait aggressive individuals.

For example, consider a scenario where a rebel group's enemy sends a radio message to potential joiners stating that joining the rebellion will result in harsh punishment against joiners or their families. This situation and similar ones are known to have occurred during the run-up to the Syrian Civil War in messages from the Assad government regime, as well as during the 1970s Ugandan conflict from the country's president, Idi Amin. A low-trait aggressive person is more likely to perceive that message as a warning to avoid joining the rebel group and therefore obey, while a high-trait aggressive individual is more likely to perceive the same message as a threat to themselves or family members, and as a result be more inclined to play an active role in the rebellion. The same external input is filtered by the individual's trait aggressiveness which determines, to a large extent, how the inputs are interpreted and the individual behaviorally responds.<sup>4</sup> This filtering process explains how the same conflict context and personal inputs, which encompass what rationalist explanations describe as cost and benefits, can produce both joiners and non-joiners.<sup>5</sup>

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<sup>4</sup>For more information about how the same input can be interpreted differently based on personality traits and particularly aggression, see Crick & Dodge (1994) and Crick & Dodge (1996) where the authors find that 'hostile-attribution-bias children' process the same stimuli as intentional affronts compared to non-bias children.

<sup>5</sup>The structure presented here is similar to the common framework in psychological accounts of behavior that reconcile observed changes in behavior due to shifting conflict factors with predictions of a high level of behavioral stability over time (see Mischel & Shoda (1995) and Mischel & Shoda (1998) for more detail).

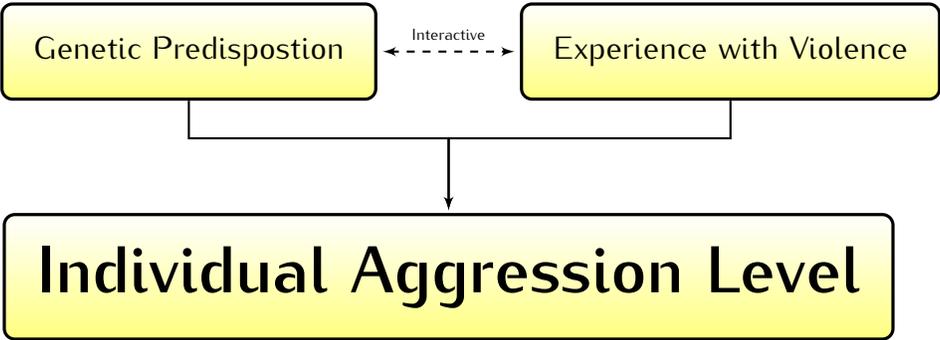
Using this framework, I argue that conflict context and trait aggression are related because the former (context) provides the avenue for expressing the latter (trait). High-trait aggression will bring about participation in rebellion because the act of participation permits for the repeated expression of aggression through violence. This leads to the primary hypothesis of this chapter:

- **Hypothesis 1:** People who choose to join rebel groups have higher trait aggression than people who do not (assuming similar external stimuli).

### 3.2 Research Design

As discussed in Chapter 2 and illustrated in Figure 3.2, aggression is formed from an interaction between biology and environment. Every person’s propensity for aggression originates with a baseline level of genetic predisposition toward aggressive actions. This baseline propensity also interacts with the person’s experiences to create a distinct level of aggression in each individual. In the case of aggression, exposure to violence or violent images during early childhood or early adolescence is generally considered the primary life experience that raise an individual’s level of aggression (Farrington, 2007).

Figure 3.2: Aggression Formation



This combination of biology and experience makes testing any personality trait, particularly aggression, difficult in a population of former rebels because the experience of participating in a rebel group is itself likely to alter the trait's measures. For example, Löckenhoff et al., (2009) find that while personality traits are quite stable over time, highly stressful and adverse events have pronounced and predictable effects on personality traits, especially when measured shortly after the event.<sup>6</sup> Participation in a rebel group is unquestionably both a stressful and traumatic event and is therefore likely to bias measurements of aggression upwards in any sample of former rebels.<sup>7</sup>

The measurement-bias problem that must be overcome is that it is nearly impossible to observe the outcome of a subject who has not served in combat. This is not an unusual problem in political science, and the standard solution to this type of 'missing data' issue (which is commonly known as the 'lack of a counter-factual') is to create a control group and compare the average effect between the treated group (volunteers) and the control group (non-volunteers).<sup>8</sup> Therefore, the ideal design to test the personality profile of rebels would be to conduct personality tests in a population of potential rebels both before and after the onset of a civil war, or civil unrest, and then compare the results between those individuals who joined the rebellion (treated) and those that did not (control). This method would then allow for a more unbiased measure of personality traits as well as a way to observe and calculate the effect of rebel participation on the measured traits. Given the difficulty in predicting with accuracy when and where a rebellion is likely to

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<sup>6</sup>Löckenhoff et.al., (2009) test and measure the Big-5 model of personality and find that trauma leads to increases in neuroticism and decreases in extraversion and agreeableness, but it is reasonable to assume the same is true for other traits and perhaps even more so when the trauma and trait align as well as rebel group participation and aggression.

<sup>7</sup>For some former rebels it is likely true that participation in a conflict has lasting and terrible psychological consequences, but there is some evidence that the average psychological consequences across all participants is relatively moderate. In addition, Blattman & Annan (2013) finds that the impact of rebel group participation on observed aggressive acts such as physical altercations is weak or non-existent in populations of former combatants.

<sup>8</sup>For good discussions on the logic behind creating a control group and estimating treatment effects see Imbens (2004) and Rubin (1974).

begin, any existing personality-trait measures of rebels are likely to take place on former rebels (i.e. after the fact) and not potential rebels as the above design dictates. Therefore, a proxy control (via group comparison or statistically) for the effect of the participation is necessary to test the primary hypothesis of this chapter with any degree of confidence.<sup>9</sup>

To surpass this significant research design hurdle, the below design utilizes data that contain a key distinction in rebel-group members – both rebel volunteers and rebel abductees. The horrible reality that some rebels were abducted into the group offers an unusual mix of subjects who have roughly the same conflict experience but considerable variation in how they became rebel group members. Child abductions, while sad, are not uncommon in civil war. The scale and scope of abductions in the Great Lakes Region of Africa, where the data originates, however, is somewhat unusual. This uniqueness offers the necessary mechanism to control for potential spuriousness between tests on joining behavior and psychological traits. In place of the ideal design mentioned above, where individuals who did not join the rebels make up the comparison group, the comparison group for this chapter is composed of involuntary combatants. The comparison groups in this design are, therefore, not between treatment and control but within treatment while controlling for participation type. To illustrate the applicability of this design, a brief discussion of the data and conflicts in the Democratic Republic of Congo (DRC) follows in the next section.

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<sup>9</sup>In the future it will be increasingly possible to bypass this problem and give personality measures to populations that are likely to experience a rebellion because of the increasing ability to accurately predict where and when rebellions will occur. In particular, I think the work by Jay Ulfelder, Patrick Brandt, and Philip Schrodt is quite compelling. If possible, in future work I plan to use these forecasting models to strategically place personality questionnaires in developing rebellions.

### 3.3 Data

The data presented below was obtained from two datasets compiled from interviews with former rebels in the DRC. Both datasets were produced by psychologists primarily interested in studying PTSD symptoms and post-conflict reintegration into local communities. In researching PTSD symptoms, the interviewers also asked the subjects how they were recruited into the rebel group (volunteer vs. abduction) and measure a version of trait aggression called “appetitive aggression.” Appetitive aggression is a measure of aggression specifically designed by the research team “to assess a participant’s attraction to violence” and is tailored for “populations that have committed serious types of violent acts like aggravated assaults or murder” (Weierstall and Elbert, 2011).

The purpose of the measure was not, however, to assess aggression in rebel group members but, rather, to provide a baseline of aggression when assessing PTSD symptoms. This measure was needed by the research team in order to account for individual aggression variation as higher levels of aggression traits tend to protect against individuals suffering from PTSD. The measure has been validated in a total of 2,632 interviews of former combatants or participants in the DRC, Rwanda, Uganda, Colombia, Vietnam and World War II conflicts. The Cronbach’s Alpha coefficient for the measure’s reliability is .80. Furthermore, it is specifically designed to assess aggression in individuals who have perpetrated or suffered from large-scale violent actions. The scale is designed to measure a distinct construct of human proactive aggression similar to the one described in Vitiello & Stoff (1997) which corresponds directly to trait aggression. The measure contains questions about the subject’s perception of aggression and their inclination toward aggressive actions. The entire measure is contained in fifteen questions which are scored on a five-point Likert scale ranging from 0 to 4 – with some of the items reverse-scored when the scale was inverted. Two sample questions are provided below, but for the com-

plete scale, see the Appendix.<sup>10</sup>

- Did you harm others, just because you wanted to, without having a reason / order?
  - 0 = Not at all.
  - 1 = Wants to harm others but doesn't have the heart to do so.
  - 2 = Slightly overdoes orders when he/she wants to harm another person.
  - 3 = Harms others beyond duty as long as these acts are to some extent consistent with the missions goals.
  - 4 = Follows a strong desire to harm others for fun in most of the cases irrespective of any instructions/orders.
  
- Once you got used to being cruel, did you want to be crueler and crueler?
  - 0 = Not at all.
  - 1 = Reports no general increase in the extent of cruelty, but has experienced times where he/she felt a drive to act out crueler methods.
  - 2 = Reports a trend for the increase of cruelty but doesn't necessarily have to be crueler every time.
  - 3 = Reports a remarkable increase in cruel behavior to achieve the same stimulation. Spends time to preconceive humiliating acts.
  - 4 = Reports no saturation for the urge to behave cruel even if performing utmost cruel acts.

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<sup>10</sup>It should be noted that the AAS scale was not designed to directly test trait aggression and is not completely comparable to trait aggression measures used in traditional psychological studies. It is, in theory, a trait measure of some type or form of aggression that is probably similar to proactive aggression (discussed in the next chapter). A more complete and detailed study (like that described in Chapter 6) is needed to better assess how close the AAS measure aligns with trait aggression.

The first of the two surveys is entitled the General Armed Group Survey (GAGS) and was collected in 2009. The data from this survey consist of 95 individual interviews with former rebels in the Eastern DRC and include questions about joining behavior (volunteered vs. abducted), several demographic measures and the Appetitive Aggression Scale (AAS). Of the 95 subjects, 57 were abducted and 38 volunteered. The second survey is entitled the North Kivu PTSD Survey and was collected in 2011.<sup>11</sup> The data from this survey consist of 224 individual interviews with former rebels in the eastern DRC, and also include questions about joining behavior (volunteered vs. abducted), several demographic measures and the Appetitive Aggression Scale (AAS). Of the 224 subjects, 119 were abducted and 105 volunteered<sup>12</sup>

Both surveys have a mixture of subjects from different rebel groups, and, to my knowledge, there is no overlap of individuals between the two surveys. The surveys ask identical AAS questions and very similar demographic questions. The similarities between the two surveys make combining the surveys ideal for analyzing variation in AAS scores. The main differences in the two survey designs are found in the questions about the subject's participation in violent events. The GAGS survey asks questions about the number of combat events while the KIVU survey focuses on the type of combat events (via questions about specific events). These differences are discussed in greater detail in the following sections. Using the surveys, the following two relationships are expected and used to test the chapter's primary hypothesis mentioned above.

- Hypothesis Tests

- *Measurement 1*: volunteers will have higher AAS scores than abductees.

- *Measurement 2*: volunteers will perpetrate more violent actions than abductees.

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<sup>11</sup>This title and name are my own and not given by the original research team.

<sup>12</sup>Several of the subjects from the entire sample were dropped because of lacking or unreliable data. The data described below are those that remained.

## 3.4 Results

In order to confidently use these two data sets, I need to first establish that the two groups (volunteers and abductees) are comparable. Generally, I expect that any post-conflict variation in the data between volunteers and abductees will reflect three distinct types of differences: pre-conflict differences, the differences in the impact of war experiences<sup>13</sup> and, finally, the selection effects of conflict participation. The argument presented in Chapter 2 and the beginning of this chapter is predicated, however, on examining only pre-conflict differences. Therefore, the final two differences must be controlled or removed in order to produce reliable and unbiased results. Below, I outline three different tasks necessary to remove potential bias from the analysis and test the two measures mentioned above to confirm the chapter's primary hypothesis.

### 3.4.1 Pre-Conflict Bias

The first task is to compare the two groups (volunteers and abductees) to see if they're similar enough on their non-AAS measures to make cross-comparison possible. It may be easier to think of this type of design as quasi-experimental. Therefore, before testing the differences in AAS scores, I need to verify that the treatment (participation in conflict in this case) is relatively similar across the groups.<sup>14</sup> The crucial assumption necessary for testing the chapter's primary hypothesis is that the subpopulations of volunteers and abductees are similar enough for meaningful comparisons. Four demographic variables are available to examine the credibility of this assumption. First, Table 3.1 illustrates a basic first analysis of the two groups.

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<sup>13</sup>This difference is predicated on understanding that identical war experiences are likely to effect people differently because of pre-existing psychological coping abilities.

<sup>14</sup>This design is similar to Blattman & Annan (2010) and the discussions in Rosenbaum & Rubin (1983) about treatment effect.

Table 3.1: Comparison of Group Means

N=299	Volunteer	Abducted	Diff. of Means
Age	22.5	21.3	1.2
Age Joined	19.7	16.9	2.8
Education <small>Scale=0-5</small>	2.45	2.70	0.25

Note: 65% demobilized within 1 year of interview and only 14% demobilized more than 3 years from interview  
Note: \* significant at 5%, \*\* significant at 10%

As Column 1 and 2 in Table 3.1 show, the mean difference between the two groups in age during the interview, age at which they joined, and education levels is generally quite small. Column 3 reports that none of the difference of means for age, age joined or education are statistically significant (at 5% or 10% confidence levels) using a Difference of Means T-Test.<sup>15</sup>

The primary argument of this chapter is predicated on there being pre-conflict trait-aggression differences between volunteers and abductees. I am, however, observing the differences across the two groups in post-conflict interviews. This means that reliable results from any analysis requires that the abduction method be, at least, partially random. Or more directly, the abduction method must be unrelated to the outcome variable of interest and, therefore, not correlated with any unobserved traits that might effect AAS scores. In this regard, several potential sources of the relation between abduction and aggression exist. For example, smarter individuals may not have been abducted with the same frequency as duller individuals because they were better able to hide and intelligence and aggression are correlated. Or perhaps the rebel groups targeted their abductions toward some particular type of individual or group that they felt would make good rebels – which again might be correlated with measures of aggression. Finally,

<sup>15</sup>Note that the difference in age when interviewed is smaller in the data than has been previously found in similar studies by Blattman & Annan (2010). While I have no way of knowing for sure, I suspect this is due to the interviews being conducted temporally closer to rebel group participation than the other studies. Young individuals who migrated away from the conflict had less time to return to the locations where interviews took place compared to the previous studies.

some abductees might have been more willing to go with rebels than others and, therefore, be more like volunteers in their personality traits. Indeed, it is likely that some of the abductees would have likely volunteered if given more time or opportunity. These three scenarios are just a sample of potential correlations between abduction and personality traits as there are dozens of other possible scenarios. Neither this design, nor the available data, can completely remove the concern of unobserved selection effects through a non-random abduction process, but the abduction tactics of the region do offer some encouraging assistance.

While horrible and life-threatening, the abduction tactics in the eastern DRC conflicts were both indiscriminate and quite extensive. Interviews with former rebels from the DRC indicate that efforts to abduct new members were not selective nor designed around specific goals. Instead, the raiding rebel groups would travel out to villages and small isolated farming households in search of both supplies and youths to abduct. These raiding parties would usually enter homes early in the morning and abduct all physically capable members of the household and then release those individuals who were not useful (mostly non-adolescent males) a day or two later. The villages and farms where abduction occurred were known beforehand, but the houses and abductees were unspecified prior to entrance and the raids were seemingly conducted in an ad hoc manner.

According to several interviews with former rebels responsible for abductions, between 60% and 75% of abductions took place in this manner while the remaining abductions occurred along roadsides and at travel stops where the rebels simply abducted any adolescent males they encountered (Blattman & Annan, 2013; Autesserre, 2010; Annan, et al., 2011). This near-random pattern of abductions is supported by the mean statistics between volunteers and abductees in Table 3.1. In addition, the randomness of abductions is also detailed in two well-regarded survey research articles on similar conflicts

by Blattman & Annan (2013). The study, using the extensive SWAY survey of more than 1,100 former Lord's Resistance Army members in northern Uganda (a conflict comparable to that seen in the DRC), is able to find significant predictors of abduction among wealth, education, or geo-location on either the abductees themselves or their parents. The evidence in Table 3.1 and the abduction methods are a first step in confirming that volunteers and abductees are similar enough to assume a high level of unconfoundedness on any unobserved variables that might create pre-conflict bias.

### 3.4.2 Within-Conflict Bias

Individual war experiences are far from uniform. Different exposures to violence from different conflict experiences could affect the AAS scores of post-conflict interviews. For example, less than one-sixth of Americans deployed to Vietnam experienced combat firsthand. On the civil-war side of research, Humphreys and Weinstein (2005) show that the variation in the abusiveness of military units varies dramatically and positively correlates with reintegration success and PTSD symptoms following the war in Sierra Leone.

This type of conflict-experience variation could produce results that show support for the primary hypothesis mentioned above, but operate through a different casual pathway than the one I provide. For example, it is entirely possible that volunteers are deployed to different types of combat actions than abductees or that volunteers spend many more days within rebel groups than abductees. Therefore, the second task to ensuring a non-bias test is examining the war experiences between the two groups for consistency.

If the war experiences of volunteers and abductees are somehow different enough that the average effect of conflict exposure varies, then post-conflict AAS scores would be unsystematically biased. As rows 1 and 2 in Table 3.2 indicate, the conflict experiences

between the two groups are different. Row 1 shows that the mean number of days a volunteer spent with his rebel group was 700 days while the mean number of days an abducted individual spent with his group was 496 days. The mean difference between these two groups is 204 days and statistically significant at the 5% confidence level, again using a Difference of Means T-Test. Row 2 indicates that the mean number of combat actions between the two groups follows a similar pattern although the number of subjects is reduced to 85 due to this question only being asked during the GAGS interviews.<sup>16</sup> The mean number of combat actions for volunteers is 12.2 and 6.3 for abductees which produces a difference in mean numbers of actions of 5.9, which is statistically significant at the 10% confidence level.

Table 3.2: Comparison of Experience  
 Volunteer    Abducted    Diff. of Means

	Volunteer	Abducted	Diff. of Means
Days w/Group N=299	700	496	204*
Number of Combat Actions n=85	12.2	6.3	5.9**
Days w/Group (w/o outliers) N=282	700	642	58
Number of Combat Actions (w/o outliers) n=74	12.2	8.8	3.4

Note: 65% demobilized within 1 year of interview and only 14% demobilized more than 3 years from interview  
 Note: \* significant at 5%, \*\* significant at 10%

The differences reported in Table 3.2, row 1 and 2, indicate that volunteers were with their respective rebel group for a longer period on average than abductees and that they participated in more fighting. This observed difference in conflict experience is troublesome for comparisons across the two groups. The difference, however, is driven by a pool of 17 abducted subjects that spent very little time among the rebels, with 16 of the 17

<sup>16</sup>The variable discussed here is the self-reported number of combat actions. The subjects were asked to estimate the number of combat events they participated in while with their rebel group. This includes fighting against government forces or other rebel groups but not smaller scale events like abduction raids, supply raids on villages or households, or theft-related events.

abducted for less than two months and significantly younger than the average subject. When these short-time abductees are removed from the analysis, as reported in row 3, the difference in mean number of days spent with the rebel group reduces to a statistically insignificant 58 days. We observe a similar pattern after these short-time outliers are removed from the number of combat actions, reported in row 4. The mean difference between volunteers and abductees then reduces to a statistically insignificant difference of means of 3.4 actions with volunteers having an average of 12.2 actions and abductees 8.8 actions. Taken together, rows 3 and 4 in Table 3.2 indicate that the remaining 282 subjects are similar enough that results from comparisons between the two groups should not be driven by a difference in the average effect from combat experience.

### 3.4.3 Aggression Results

Using the subjects remaining after the data sorting reported in the above section, I examined the relationship between aggression and volunteering to join a rebel group using a sample of former rebels from the DRC. The comparison groups were individuals who volunteered to join versus individuals who were abducted and forced to join. The results presented in Table 3.3 corroborate the primary hypothesis that ‘individuals who join rebel groups have more aggressive personalities than individuals who do not’.

The Appetitive Aggression Scale assesses the extent of attraction to the perpetration of violence or the ability to experience violence-related enjoyment and corresponds to Measurement 1 mentioned above. Relatively high levels of appetitive aggression were present in both the the abducted and the volunteer group which is expected given the subjects’ experiences during the conflict. As row 1 indicates, however, volunteers scored a mean of 28.9 while abductees scored a mean of 19.6 on the AAS scale which ranges from 0 – 60. A Difference of Means test confirms that the 9.3 difference between the two

group scores is statistically significant at the 5% confidence level, showing that volunteers have, on average, a higher level of trait aggression than abductees. In addition to scoring higher on the AAS, volunteers also participated in more violent combat events on average which corresponds to Measurement 2 mentioned above. The difference in Table 3.3, row 2, indicates that volunteers on average scored themselves a statistically significant 1.7 points higher on the “average type of combat action” question than abductees, meaning they perpetrated more violent acts on average. This scale is scored 0-6 and ranges from participating and witnessing intense fighting (6) to non-violent theft of property (0).

These two results are indicators that volunteers are systematically different in their trait aggression levels even when we control for the experience of combat.

Table 3.3: AAS Difference of Means  
Volunteers Abductees Diff. of Means

	Volunteers	Abductees	Diff. of Means
Appetitive Aggression n=282, Scale = 0-60	28.9 (4.8)	19.6 (4.9)	9.3*
Type of Combat Actions n=205, Scale = 0-6	3.8 (1.1)	2.1 (0.9)	1.7*

Note: \* indicate significance at the .05 level

Despite the similarity of volunteers and abductees on demographic variables (Table 3.1), the narrative of abduction practices, and the similarity of conflict experiences between the two groups, it is still possible that some unobserved variation still exists between the two groups that accounts for the AAS differences. Therefore, I performed a robustness analysis to check the finding reported above. Table 3.4 reports the mean values on the 4 variables that exist in both surveys before and after a propensity-matching procedure was performed. The full Logit model used for the estimation is available in the Appendix. The model used all four variables listed in Table 3.4 and a dependent variable of abduction.

The model is by necessity a binary model with the outcomes of volunteer and abductee. Either a Logit or Probit model would have been appropriate as the choice of Logit vs. Probit for propensity score matching on a binary outcome is not particularly critical and unlikely to change the results (Smith, 1997; Caliendo & Kopeinig, 2008). The matching procedure was done using the propensity score from the model (provided in the appendix) and based on a nearest neighbor matching criteria.

The choice of which variables to include in the matching procedure, however, is important as omitting important variables can bias estimates (Heckman, Ichimura & Todd, 1998). In this case the choice is not straightforward as none of the variables was a significant predictor of abduction. I, therefore, included all four available variables in the matching procedure.

Matching is generally used as a way to create 'experiment-like' groups to estimate causal treatment effects and is used where one has a group of treated individuals and non-treated individuals. This is not the case, however, in the analysis and results presented here. Instead, I am using the matching procedure to try and control for any remaining unobserved pre-conflict bias. It may be useful to think of the utility of matching in this case as attempting to randomize the treated individuals, the treatment being rebel group membership, into two groups. The two groups are, therefore, balanced on all available variables which should, as much as possible, also create balance on non-observed pre-treatment variables. This 'control' is obtained by balancing all the observed variables which is why including all the available variables in the matching procedure was appropriate. No causal inference is drawn from the matched groups or the procedure, instead the matching procedure is simply verifying the inference described in Table 3.3 via a more rigorous process.

Table 3.4: Matched Mean Scores  
Non-Match, N=282      Match, N=68 pairs

	Volunteer	Abducted	Volunteer	Abducted
Age	22.5	21.5	22.1	21.6
Age Joined	19.7	16.1	18.0	16.6
Education <small>Scale=0-5</small>	2.45	2.67	2.51	2.58

Note: The Non-Matched means differ from Table 3.1 because the N doesn't include the 17 dropped short-time abductees.

Both the non-matched sample and matched sample are presented in Table 3.4 with 68 matched pairs included (half of the full sample).<sup>17</sup> Note that the change in means are quite small, which is expected because none of the variables predicted abduction well. Table 3.5, however, illustrates the utility of the matching procedure by using the matched pairs to further examine whether the AAS score difference between volunteers and abductees remains among even the most experienced and violent rebels. Using matched pairs of rebels to conduct this supplementary analysis allows me to control for pre-conflict bias while testing the effect of within-conflict bias as much as is possible given the data constraints.

Table 3.5, row 1, displays the 20 matched pairs with the largest combined scores on the Days w/Group and Number of Combat Actions variables. To create this measure, I added the two variables together for each pair (4 variables total) and included only the most experienced 20 pairs (40 subjects).<sup>18</sup> This can also be thought of as the 40 most experienced rebels (20 volunteers and 20 abductees) who are also the closest in the four variables of age, age joined, education level. The results indicate that even between the most experienced volunteers and abductees, volunteers, on average, score 11.1 points higher on the AAS. This finding is again statistically significant at the 5% confidence level and similar to the full sample finding in Table 3.3. The mean difference of 11.1 is

<sup>17</sup>The choice to include only 68 matched pairs in Table 3.4 was completely arbitrary.

<sup>18</sup>The choice to include only 20 matched pairs is completely arbitrary but the results are robust when using both 15 or 25 matched pairs.

Table 3.5: Exposure to Violence  
Most Experienced Rebels

	Volunteers	Abductees	Diff. of Means
Appetitive Aggression	34.2	23.1	11.1*

N= 20 Matched Pairs

Most Violent Rebels

	Volunteers	Abductees	Diff. of Means
Appetitive Aggression	36.4	22.1	14.3*

N= 20 Matched Pairs

larger, however, than the mean difference in the full sample (9.3) which indicates that the AAS scores of volunteers increase more with increased experience than abductees. The data do not allow any more detailed analysis of why this increase happens or what is driving the observed difference. It is possibly a result of a small subset of very high trait-aggressive individuals who also stay with the rebel group for a long time and participate in a large number of combat actions. Or that, the effect of increased experience, which should allow for more exposure to violence, somehow affects high trait-aggressive individuals more than low trait-aggressive individuals because aggression plays a more central role in their personality.

Row 2 in Table 3.5 tells a similar story. To create this group of matched pairs, I included the 20 matched pairs with the highest mean score on the 'Type of Combat Actions'.<sup>19</sup> The matched pairs included in this row contain the 20 most violent pairs of rebels and the results again indicate that volunteers score higher than abductees. It should also be noted that both sub-groups, most experienced and most violent, are highly correlated.<sup>20</sup> The results of Table 3.5 do indicate that the Primary Hypothesis of this chapter is supported

<sup>19</sup>Again the choice to include only 20 matched pairs is completely arbitrary but the results are robust when using both 15 or 25 matched pairs.

<sup>20</sup>I am unsure why such a correlation between the most experienced and violent rebels exist, but it is possible due to the interview location or structure of the interviews.

even when controlling for exposure to violence.

### 3.4.4 Remaining Potential Bias

The above section discussed whether volunteers and abductees were similar on their non-AAS measures (first task) and addressed potential bias from the volunteers and abductees having different wartime experiences (second task). This section discusses the third and final task necessary to validate comparing volunteers and abductees. In civil war, the death rates of combatants and the migration in and out of conflict by combatants both occur at a relatively high rate. Therefore, a conflict selection effect probably occurs in that we only observe those rebels that survive and stay in their rebel group.

I call this selection process 'conflict sorting'. Conflict sorting deals with unequal rates of death and migration across volunteers and abductees. Conflict sorting is likely to have occurred in both volunteers and abductees because the interviews only contain individuals who were available for interviews during the demobilization process. For example, if high trait aggressive individuals and low trait aggressive individuals are killed at different rates, which is quite likely, then any post-conflict interviews would, by necessity, contain a different distribution of trait aggressiveness than the in-conflict reality. Or, again for example, abductees might have migrated out of the camp at a higher rate than volunteers, which is again likely, causing the interviewed abductees to not accurately represent the near-random process of abduction described above. These are only two examples of several potential selection effects that could bias the distribution of trait aggression in post-conflict interviews. The data, unfortunately, does not allow for complete removal of this type of bias and only additional data with specifically designed questions to address this problem will allow me to address this concern. A study of this type is discussed in the section entitled 'Future Directions' (6.4) later in Chapter 6.

## 3.5 Conclusion

This chapter examined trait aggression among a sample of former rebels that contained both volunteers and abductees from conflicts in the DRC.<sup>21</sup> A hypothesized relationship between higher levels of trait aggression and volunteering was found and this relationship was robust to increased levels of conflict experience. The contribution of this chapter lies in producing the first empirical evidence that personality-trait variation (specifically aggression) explains the primary research question of this project: *why do some individuals join rebel groups while others do not?*

A number of limitations are evident in this chapter. While the analysis utilized data on trait aggression from former rebels in the DRC, it does not provide any evidence on the importance of other personality traits such as risk-taking, threat perception, or the set of Big-5 traits. Each of these traits needs to be investigated before a complete picture of personality and rebel participation is obtained. Furthermore, the chapter relied solely on interviews from one area, the DRC, and it is entirely possible that the effect of personality varies based on the conflict characteristics or the group of potential participants. This issue is further discussed in Chapter 6. Finally, the analysis does a good, but not complete, job of addressing the confounding potential biases that are unobserved between volunteers and abductees. Unfortunately, this poses a very difficult problem when studying personality in a population of former combatants. To address this concern, different and innovative research designs are necessary - one of which is discussed at the end of Chapter 6.

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<sup>21</sup>The results from this chapter align well with previous work looking at the differences between volunteers and abductees, although on different topics or with different methods, most notably those in Weierstall et al. (2012a,b) and Weierstall and Elbert (2011).

Notwithstanding the aforementioned limitations, the chapter highlights the role of personality-trait variation in understanding why some people become rebels. Enhancement of this design and research could expand the understanding of rebels, rebellion, and civil war. In all, this chapter provides a compelling first look at the role of aggression and personality in rebel group membership and provides ample direction for future work on the topic.

# Chapter 4

## Aggression and Decision Making

“Love of war, bellicosity, is the counterpart of the love of peace; but militarism is more, and sometimes less, than the love of war. It covers every system of thinking and valuing and every complex of feelings which rank military institutions and ways above the ways of civilian life.” – Alfred Vagts (1937, p.17).

In this Chapter, I assess the relationship between personality and cognition with a focus on the relationship between aggression and decision-making. The argument and hypotheses developed are anchored in the findings, from Chapter 3, that high-trait aggressive individuals are more likely to join rebellions. Because aggressive individuals are more likely to be part of rebel groups, it is important to also investigate how aggression affects decision-making. Understanding how people with particular personality traits, aggression in this case, think through simple rational games can help scholars and practitioners better design conflict management and re-integration tools. In the first section of this Chapter, I outline how this analysis applies to the civil-war research program on rebel joining and generally to the study of rebellion and civil conflict. In the second section, I provide the chapter’s research design and a description of the data and data generation process. In the final section, I provide a detailed analysis of the data and test two hypotheses.

In addition, this chapter innovates from other research designed to study conflict by ty-

ing together both personality and physiological factors into an experiment which conflict scholars will recognize as simulating a conflict-bargaining environment. I present a novel design that measures both emotional arousal (through physiological arousal) and trait aggression as a window into System I and II (automatic versus reactive or intuitive versus thoughtful) decision-making. This innovation is important because emotions and personality traits play a greater role in conflict behavior than we are comfortable acknowledging. I do not, however, offer any judgment about the superiority of one decision-making process over the other. Instead, I simply argue that understanding more about decisions similar to those made during conflicts increases knowledge and understanding about both rebellion and civil war.

## 4.1 The Costs and Benefits of Conflict

Explaining rebel-joining behavior and rebel behavior in general has primarily fallen to rational-choice theorists. These scholars generally view rebellion as an effort of collective dissent and, therefore, apply the research on Collective Action (CA) in their explanations. This is most clearly seen in Lichbach (1995). Lichbach argues quite emphatically that rebel joining behavior is best understood through the rational actor approach. Furthermore, Lichbach argues, again quite emphatically, that theories of Collective Action are better than theories of Deprived Actors (DA). Indeed, *The Rebel's Dilemma*, by Lichbach's own contention, is intended to, "establish the value of the CA research program in conflict studies" (p. 325).

Because Lichbach and others use the research on collective action as the bases for their explanations, the decision to join a rebel group (and other rebel behaviors) are explained through individual calculations of costs and benefits. These decisions are modeled based

on three key assumptions that most rational-choice theories require.<sup>1</sup> The first assumption is that decisions involve utility maximization – the understanding that a person maximizes utility when confronted with an array of choices. While there are disagreements about what and how individuals maximize, “maximization of some sort” is almost universally accepted by rational-choice theorists (Arrow, 1951, 3). The second key assumption for rational-choice theorists in conflict (and all other collective actions) is that the relevant maximizing agents are individuals. Individuals are the subjects of rational-choice models and collective action is seen as a process by which individual preferences emerge. Finally, the last assumption is that rational-choice models apply equally to all persons under study.<sup>2</sup> That is, the modeled decisions, rules, and preferences are similar among all people. This does not mean that all individuals are identical, but instead that a high degree of interpersonal consistency is necessary to keep the problems of tractability to a minimum (Strom, 1990, 126).

This chapter and the analysis presented below are part of the Collective Action research program on rebel participation. I am not arguing that Lichbach and others are wrong in their approach but, rather, that individual personality variation can add important nuances in understanding the behavior of rebels. Similar to the argument in Lichbach (1996), this chapter takes the approach that self-interest and utility maximization are the baseline model of conflict decisions, but that the conception of rationality as applied to rebels needs to be expanded to better mirror reality. Rebel participation is a risky and aggressive undertaking and rebels are those few individuals who are willing to chance injury and death. Therefore, accounting for this variance in models of conflict decisions is relevant and necessary to move the Collective Action research program on rebel participation forward.

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<sup>1</sup>For a very good discussion on the assumptions of rational-choice theories as applied to work in political science, see Chapter 2 in Green & Shapiro (1994).

<sup>2</sup>This assumption holds, at the very least, when models are empirically applied to decisions, although I am willing to concede that this homogenous assumption is not always present in pure theoretical models.

Although Chapter 3 in this dissertation is the first research I am aware of that examines differences in personality traits between rebels and non-rebels, I am not the first to recognize that rebels are somehow different than the average citizen. For example, Mueller (1989) argues that revolutionaries must be those individuals who are extreme risk-takers because most attempted revolutions have a high likelihood of failure. Additionally, via interviews with the Communist guerrillas in Malay, Pye (1956) finds that rebels are particularly risk-prone individuals. In addition, one of the solutions to Lichbach's 'Rebel's Dilemma' (1995) itself is variation in an individual's propensity to take risks. Lichbach, however, stops at the assertion that some individuals may have a higher 'taste' for risk and instead offers only group-level explanations for why this variation exists.<sup>3</sup> And no research, at least that I am aware of, pays particular attention to the dissimilarity of rebels from the population to explain rebel or rebel-group behavior.

The awareness that risk-taking and aggressive individuals tend to be the people who make up rebel groups and the rational-choice models used to explain their behaviors are disconnected. This disconnection is a result of the fact that most rebel behavior theories based in rational choice are from what Ferejohn (1991, p.282) calls the "thin-rationality" account. In this type of rational modeling, agents are assumed to be rational only as they choose the option that most efficiently obtains their goals. In contrast, "thick rationality", also from Ferejohn (1991, p.282), posits that agents are best modeled according to rationality and their specific preference ordering and beliefs. But using individually based models to explain behavior is highly problematic because if people have vastly different motives then predicting universal behavior is difficult. If, however, certain types of people (risk-takers and aggressive individuals) are included in the studied group, then using this already occurring selection to create likely preference ordering would be helpful for

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<sup>3</sup>See Lichbach (1995) Chapter3, Section 9 for this argument. In the main contention, Lichbach claims that wealthy, independent, or unsuccessful people are those most likely to take risk.

rational-choice modeling. Or, stated another way, the decision to join a rebel group and the behavior of rebels can be better understood if the rational choice models used to predict the behavior included the insight that the individuals who make up rebel groups systematically vary in their perception of the severity of cost and their attraction to potential benefits when compared to the general population.

For example, if we examine the participation in rebel groups from the perspective of rebels, it is apparent that cost and benefits are highly related. Benefits are some function of costs. The participatory benefit that people potentially receive from their involvement in a rebel group will be affected by their perception of the potential cost they may incur when asked to commit violent and aggressive actions. As I explained in Chapters 2 and 3, an individual's attraction to violence and aggressive actions is shaped by his personality traits. This means the perceived personal cost of having to commit violent actions also varies across individuals and, therefore, so does the perceived benefit of participation. Finally, this means that the order of preferences in a rational-choice model for joining a rebel group – which are shaped by the perceptions of the cost and benefits of membership – are, at least partially, generated by the individual's personality traits.<sup>4</sup>

I am not the first researcher to try and understand the underlying preference formation mechanisms in conflict-related decisions. Indeed, a plethora of work exist on this front. Recently, however, conflict scholars have begun studying rationalist explanations by examining the behavioral foundations of bargaining using both lab and field experiments. Specifically a proliferation of work using human subjects in hypothetical, but cleverly designed, bargaining situations has discovered a consistent difference in individual responses to the same conflict-related simulations (Crawford, 2000; Mercer, 2006; Butler, Bellman & Kichiyev, 2007; Tomz, 2007; Tingley & Wang, 2010; Tingley &

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<sup>4</sup>Without reference to personality, books by Hirschman (1982) and Dennis (1991) make a very similar argument about those individuals who choose to participate in collective actions.

Walter, 2011; Tingley, 2011). For example, Tingley, Lee and Renshon (2014) examine how individuals who have a more emotion-based decision-making process are less prone to commitment problems in a game that manipulates bargaining-power dynamics similar to those observed in conflict negotiations. In addition, some research has begun examining the source of observed individual-level variation in commitment games. This work generally argues that biological variation, measured through hormonal or genetic differences, accounts for variation in either preference formation, cognition type, or both (Rosen, 2004; McDermott et al., 2007; McDermott, Fowler & Smirnov, 2008; McDermott et al., 2009).

While still a new trend in conflict scholarship, this type of rational-model testing is old hat in other fields. For instance, research in psychology and sociology, comprising several different types of methods and designs, generally finds that individuals deviate from rational expectations for a variety of different reasons. For example, people display information-processing bias, confirmation bias, incorrect assessment of probabilities, underassessment of resolve, or one of several other violations to rational-utility theory.<sup>5</sup> This work has become so expansive that scholars generally parse the research on differences between rational models and individual differences into two categories.

In the first category are those who argue that individual differences in rationality come from sources such as performance errors, lapses in attention, memory differences, and computational limitations. This area of research contends that observed differences are not a function of individual differences in rationality but differing 'mistakes' in the player's logic. In the second category, supporters argue that observed individual differences in rationality come from systematic irrationalities in the players (Stanovich & West, 2000). This Chapter fits well in the second category, although I am hesitant to use term 'irrational' because it implies that those individuals who differ from the model simply do not

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<sup>5</sup>For a summary of the research on individual differences and reasoning outside conflict studies that is very detailed but a bit dated, see Stanovich (1999).

weigh cost and benefits, as opposed to weighing cost and benefits differently. In line with the second category of understanding why some individuals differ in their calculations, I contend that personality-trait variation (particularly aggression) is one important way to explain individual differences from rational-choice models of conflict behaviors because it shapes how the cost and benefits of the action are perceived. The experiments below are designed specifically to confirm or deny that contention.

In sum, underlying this Chapter, and indeed this entire dissertation, is the assumption that two people can process the same information differently. In the civil-war literature, however, it is much more common for scholars to base their research in the underlying assumption that uniform logical, rational calculations form the basis of decisions, even though there is ample anecdotal evidence to suggest that some aspect of psychology impacts the decision-making process. Furthermore, because Chapter 3 illustrates that one psychological aspect found in rebel groups is likely to be high levels of trait aggression, it might be useful to know how individuals with high levels of trait aggression make decisions, and, just as important, whether they operate in the same way as individuals with low levels of trait aggression. The most recent work in psychology argues that decisions are made through specific cognitive processes that extract crucial information from the world and regulate everyday actions. In addition, it is believed that these processes vary across individuals because they are based in genetic differences which have been shaped during evolution to produce specific behavioral distributions that are likely to increase the survivability of groups (similar to the process discussed in Chapter 2) (Shaw & Wong, 1989). The discussion and analysis below are, therefore, designed to both help validate the underlying assumption of this project and, partially, to show that personality traits can be a tool to understand behavior variation in a decision framework conflict scholars will recognize.

In the next section, I present a research design that links decisions and trait aggression, explain a commonly used theory on decision-making processes and, finally, illustrate how the results can explain rebel behavior.

## 4.2 Research Design

To test if trait aggression has an effect on decision-making, I need a structured and consistent logical decision to compare to measures of trait aggression. Previous research comparing aggressive behavior and decision-making is sparse even in the primary fields of psychology and sociology.<sup>6</sup> There is, however, a good deal of research comparing group behavior to individual behavior in a variety of different experiments and while testing aggression. Most of this research comes out of psychology and primarily focuses on competitive behaviors as the findings have generally indicated a significant uptick in competitive actions when individuals form groups. Generally, this research revolves around the player's behavior during the process or their behavior relative to their bargaining position, with only passive mentions of player psychology.

The few examples of relevant research in political science focus on either altruism (sometimes considered the opposite of aggression) or levels of testosterone. For example, Fowler (2006) finds that high levels of altruism predict voter turnout and other forms of political participation. Fowler argues, similar to Chapter 2, that altruism is based in genetic differences from evolution and that trait measures can help build a more complete picture of political participation. Fowler's argument is also similar to the argument in

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<sup>6</sup>Two notable exceptions are a pair of articles by Meier & Hinsz (2004) and Meier, Hinsz & Heimerdinger (2007). In both of these articles, the authors created a simple theory about aggression variance between groups and individuals and then conduct an experiment using hot-sauce allocation. Their results confirm the theory that groups behave more aggressively than individuals, but nothing is implied on whether groups of aggressive individuals behave more aggressively than groups of non-aggressive individuals.

Chapters 2 and 3 of this dissertation – i.e. altruism predicts higher levels of political participation because individuals with high levels of altruism are more attracted to the types of activities that political participation encompasses. In addition, McDermott et al. (2007) find that testosterone predicts aggressive actions in a crisis-simulation game while cortisol predicts non-aggression. McDermott et al. do not, however, relate levels of testosterone to trait aggression in any way.

To test the relationship between decision-making and aggression I employ the ‘ultimatum game’ to provide the consistent logical decision necessary to compare to measures of trait aggression. The ‘ultimatum’ game is well-suited to study the role of aggression in decision-making because subjects actually experience a cost in order to give a benefit to someone else. The game, by design, reveals preferences for either helping your opponent or for punishing your opponent. In the game, the instructor gives Player A a certain amount of goods (10 points in my case) and then instructs the subject to divide the goods between herself and Player B. This offer – the ultimatum – is final and there is no additional negotiation between the two players. Following the offer in the ultimatum game, which is unlike the ‘dictator game’, Player B, however, has the opportunity to accept or reject the offer. If Player B accepts the offer each player receives their allotment. If Player B rejects the offer each player gets nothing as there is no agreement – i.e. neither player receives any points. Therefore all rejections result in zero benefit for both players. Rational-choice theories of self-interest predict that B players will accept all offers because something is always better than nothing and that, knowing this, Player A will offer only low amounts (Stahl, 1972; Rubinstein, 1982). Rejections from Player B, as she has forgone any economic benefit, must, therefore, be explained by some sort of deviation from pure economic cost-benefit calculations. Using this game, I can uncover if high levels of trait aggression explain deviations from rational self-interest because Player B should always accept the offer of Player A. All aspects of the game are common

knowledge and no information is private.

### 4.2.1 Experiment

The few research projects that utilize experiments in conflict or conflict management research are designed to test the rational decision-making framework. Simply stated, the experiments are designed to test whether people behave the way our formal models predict (i.e. those in Fearon (1995), Lichbach (1995), and Powell (2006)). That rational vs. non-rational dichotomy, however, is really the wrong way to think about decision-making in terms of conflict. For example, it is probably true that if we ask a large, randomly selected group of individuals to participate in a rational-choice experiment designed to simulate conflict dynamics, the observed results would approximate a formal model using the same logic. That is not, however, a good design for studying rebel groups (or probably any conflict group) because, as the findings in Chapter 3 show, rebel groups are not composed of randomly selected individuals. Therefore, it is incorrect to expect them to behave like a randomly selected group, or make decisions like a randomly selected group. Instead, the hypotheses below are proposed to test whether the types of individuals, who we know from Chapter 3 are likely to be rebel-group members, those with high-trait aggression, behave in systematically different ways.

In ultimatum games the general prediction is that B players who want the best chance to earn money will take any offer and, therefore, a self-interested Player A who anticipates this will offer the smallest available amount. Contrary to rational-choice theory predictions, however, several experimental results have found that in ultimatum games, low offers are frequently rejected (see Guth et al., 1982; Roth, 1995; Hoffman et al., 1996; and Cameron, 1999). This high rate of rejection for low offers indicates that some players are willing to forgo benefits in order to punish their opponent. There is no widely

accepted explanation for this deviation from rationality; however, evidence has emerged that players who reject low offers are happier, even if they are poorer (Bolton, 1991; Fehr & Schmidt, 1999). Burnham (2007) has found that the origin of low-offer rejections lies in internal individual differences, in his case high levels testosterone, and not in some sort or miscalculation or mistake by the player.<sup>7</sup> In addition, Sanfey et al. (2003) argues that low offers are often rejected because the offer is perceived as unfair and objecting to unfairness is an adaptive mechanism which we assert to maintain a social reputation. They go on to argue that negative emotions provoked by the perception of unfairness can lead people to sacrifice sometimes considerable financial game in order to punish their partner for the insult.

Low offers, by design, induce conflicting motives in Player B's brain between rational ("accept") and emotional ("reject") on the subsequent decision. The important variation in studying rebel-group behavior, however, is not just this accept vs. reject decision. Instead the important variation in studying rebel-group behavior is the deviation of accept vs. reject behavior in rebel-group members from non-rebel group members. In the below analysis this difference is represented by examining individuals with high levels of trait aggression, which Chapter 3 argues exists in rebel groups, and individuals without high levels of trait aggression. Therefore, the following hypothesis is proposed:

- **Aggression Hypothesis:** High-aggressive individuals will play the game differently than low-aggressive individuals.
  - *Measurement:* Aggressive individuals will be more likely to make the low offer when playing as player A (compared to non-aggressive individuals).

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<sup>7</sup>There is some evidence that low rejection offers are based on worries about reputation formation (i.e., if you accept a low offer once you will always accept one). This strategy even appears to be quite rational in iterated games (Bolton, 1997; Page et al., 2000; Alexander, 2006). The results provided here do not address this concern, but there is research that suggests high levels of testosterone and aggression modulate concern for reputations (Ellingsen, 1997). Ultimately, for a more complete understanding of the role of reputation, more experiments are necessary.

- *Measurement*: Aggressive individuals will be more likely to reject the low offers when playing as player B (compared to non-aggressive individuals).
- *Measurement*: Aggressive pairs will be less likely to reach an agreement than non-aggressive pairs.

#### 4.2.1.1 Experiment Procedure

Ninety-six undergraduate students (mean age = 20.4) conducted the experiment (50 female and 46 male). All subjects were from the University of Illinois and obtained using the Political Science Subject Pool in the Spring 2015 semester. Each subject completed a survey 2–4 weeks before the experiment which measured aggression using the instrument suggested by Raine et al. (2006) and provided in the Appendix. The aggression instrument is entitled the ‘Reactive–Proactive Aggression Questionnaire’ and contains 23 items (11 reactive and 12 proactive). Only the 11 reactive questions are used in the analysis below, as reactive aggression is considered a better measure of ‘trait aggression’ and aligns best with the ‘Appetitive Aggression Scale’ discussed in Chapter 3.<sup>8</sup> Examples of the reactive questions are “yelled at others when they have annoyed you”, “reacted angrily when provoked by others”, or “felt better after hitting or yelling at someone” – the entire scale is available in the Appendix. Each question was scored with a 0 (never), 1 (sometimes), or 2 (often) scale for a potential range of 0–22.

The experiment began with two subjects entering the experiment room after having previously self-registered online for a time and date of participation. After completing the consent process, both subjects were immediately connected to physiological-arousal sensors. Both subjects were then asked to watch a video of approximately three minutes long

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<sup>8</sup>As a robustness check the analysis was also completed using just the proactive measures and the entire questionnaire (proactive and reactive). Generally using the entire questionnaire produced the same results as below, but with less significance on each question. The proactive measures alone produced mixed results as they were significant for the second measure of the Aggression Hypothesis but not the first or third.

consisting of relaxing images with calm music in the background. This protocol, which has been used in previous research, is designed to establish a baseline measurement for the sensors (Renshon, Lee & Tingley, 2014). The sensors are designed to measure electrodermal reactivity, with two electrodes attached to the wrist of the non-dominant hand (Blascovich et al., 2011). This allowed the skin-conductance level (SCL) to be recorded continuously throughout the study (SCLs are discussed in detail below).

Following the video subjects were given a sheet of paper with detailed instructions that explained the rules of the bargaining game. In addition, the instructions were explained verbally and any questions answered. This instruction time served two purposes. First, it ensured that each subject understood the game and the logic behind it, and second, it allowed the sensors enough time to establish a second baseline recording of the skin conductance levels during a verbal exchange. According to Blascovich et al. (2011), multiple baseline recordings during different tasks is optimal for SCL measurement. Following the instructions, the bargaining game began and was played according to the details in the next section. After playing the game, subjects took a short post-experiment questionnaire that included questions on their feelings and decisions during the game. The entire session lasted approximately 40 minutes.

#### **4.2.1.2 Game Set Up**

The experimental subjects were anonymously paired with each other and randomly assigned to positions in the game. The two players (A and B) were placed into a single-period ultimatum game structured in the following way: the game was played for stakes of 10 points. Ultimatum offers were constrained to be either 7 out of 10 points or 2 out of 10 points but the choice of 2 or 7 was completely left to Player A. These two options were picked because the focus of the experiment is on studying variances in offer choice

and rejection behavior. In a number of previous studies using ultimatum games, the low offer is either so low that rejection comes with no cost, or so close to half that fairness is observed and the offer always accepted. Therefore, in ultimatum games where the researcher is interested in studying variation in offers and responses, it is generally necessary to make the offers discreet while also ensuring that the low offers have a probable choice of acceptance (for an example, see Guth et al. (1982) or Burnham (2007)). The two choices available to Player A represent two distinct risk vs. reward behaviors. To clarify, those Player A's who offer 7 points are making a low-risk and low-reward decision. Because they know that Player B is likely to accept 7-point offers which ensures points for both players but only 3 points for themselves. Player As who offer 2 points, however, are making a high-risk and high-reward decision because Player B is more likely to reject these low offers. Therefore, the Player As who make the 2-point offer are willing to risk getting no points for the possibility of getting the higher amount of points (7). In all cases Player A must offer either 2 or 7 points and Player B must accept or reject the offer. The game was played only once and the offer and response recorded.<sup>9</sup>

#### 4.2.2 Skin Conductivity Measurement

In addition to the above game and surveys, the participants' skin conductance levels (SCL) were measured throughout the experiments. Both subjects received the SCL measurement in each experiment. SCL is an indicator of increased emotional arousal during decision-making and clear sign that the subject's brain is using an emotion-based decision process (for verification, see Fowles et al., 1981; Sequeira et al., 2009). Measures of skin conductivity are revealed by the amount of electricity that passes between two electrodes touching the skin. Changes in conductance levels are related to microscopic secretion from the eccrine (skin) sweat glands which increases conductance because sweat is an

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<sup>9</sup>To incentivize the game, and explained during the instructions, each player was given 1 entrance into a random lottery for a \$50 Visa gift card for each point he or she obtained. This meant that both Player A and Player B wanted as many points as possible.

electrolyte (salt and water) solution (i.e., more sweat means more conductance). The brain processes involved in eccrine sweating are relatively complex, but the areas of the brain that regulate sweating are crucially involved in emotion-based processes (Boucsein, 1992). Thus, skin conductance is often used as a valid and reliable indicator of emotional arousal (Figner and Murphy, 2011).

Conductance levels are difficult to control consciously and generally indicate increased activity in the region of the brain responsible for intuitive decision-making and not in the region related to deliberate decision-making (Cacioppo et al., 1997, 1999). Skin conductance levels cannot, however, distinguish between which emotion is active or even the general direction of emotion (i.e., positive vs. negative). Instead, skin conductance levels are used as a measure of the intensity of emotional arousal and an indicator of an emotion-based decision-making process.

Conductance levels are generally measured via a small electronic device placed on the subject's hand (usually the fingers, palm or wrist). The devices were placed on the wrist during this experiment because previous work has indicated that sweat in that area is strongly related to mental processes and not to thermoregulation (Boucsein, 1992). The devices used were called 'Q-sensor pods' and produced by the Affectiva Company. They weigh less than 1 ounce and are approximately 1.5 inches in both length and width. The devices are attached to the wrist using a neoprene band. The measurements were begun with the press of a button and ended with the same. After the experiment, the devices were removed from the subjects and connected to a computer. Each device then transferred a continuous stream of SCL data.<sup>10</sup>

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<sup>10</sup>Similar SCL measuring devices and procedures have been used in several experiments to investigate the relationship between emotions and decisions (for a few examples, see Van't Wout et al. (2006), Civali et al. (2010), Figner and Murphy (2011) and Tingley et al. (2014).

To facilitate the measurement of skin conductance levels I followed the procedure outlined in Finger and Murphy (2011). The device was placed on the inside wrist of the participant's non-dominant hand. Across the subject's skin and between the two electrodes, the device sends a constant and imperceptible voltage that is recorded at a rate of 32 distinct measurements per second.<sup>11</sup> Changes in conductance are bidirectional (can both increase and decrease). These measurements were converted to a time-series dataset by the software provided by the manufacturer. The software produces a statistic of a per-second average of the 32 SCL measurements for each second between the device being turned on and being turned off.

To further validate the SCL analysis, I created a dual-period baseline of the individual's combined level which watching the video and reading the game instructions. Because the devices do not have the ability to track changes relative to real time, I recorded in a spreadsheet the time when the SCL measurements were begun, when the video began and ended, when the instructions began and ended, and when the game began and ended. Combined with the device output, these times allow me to create 'time zones' of SCL measurements for each subject with the time zones being created during the 'video', 'instructions', and 'game' portions of the experiment. Additionally, to allow for slight variations in the time recording, I removed the first and last 5 seconds in each time slot. The variables relevant to the analysis entitled 'baseline' and 'game' were then created. The 'baseline' variable is the combined mean SCL during the video and instruction time

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<sup>11</sup>Note that several different types of skin-conductance measurements are commonly used in psychophysiology experiments and different conductance measurements are best used for investigating different types of responses. For example, one such measurement is called Skin Conductance Rate (SCR) and is measured at a rate of 1,000-2,000 measurements per second. SCRs can determine emotion spikes or peaks during specific short-term activities or during interview questions. SCRs are generally analyzed using some type of ANOVA with changes in amplitude being reported. The type of conductance measurement I used is called Skin Conductance Level (SCL) and is measured at a much slower rate of 20-40 measurements per second. SCLs are used to measure changes in the average use of emotion during longer decision processes and are best analyzed using the difference in means between different periods of activity. SCLs are not recommended for analyzing rapid changes in emotion or for changes in quick tasks. For a full explanation of the differences between skin conductance measurements including SCRs and SCLs see Braithwaite, Watson, Jones & Rowe (2013).

zones for each subject. The 'game' variable the mean SCL during the 'game' time zone. Therefore, the generated physiological variable used in the below statistical analysis is the difference between the 'baseline' mean and the 'game' mean which is distinct for each subject. Individual differences in natural skin conductance levels vary widely and, therefore, comparison across individuals is not recommended.<sup>12</sup> Instead, the data and analysis are all recorded and performed within each subject.

For example, Subject 33's mean skin-conductance levels were 16.06212 during the video and 16.04778 while reading the instructions which produced a baseline mean of 16.05460. During the game, Subject 33's SC levels increased to 16.52001, however, which produced a difference between the baseline mean and the game mean of 0.46541. This is distinctly different from Subject 61's mean skin-conductance levels which were 0.26336 during the video and 0.262183 while reading the instructions which produced a baseline mean of 0.262232. During the game, Subject 61's SC levels also increased to 0.278894, however, which produced a difference between the baseline mean and the game mean of 0.01662. The large variation between the mean levels of Subject 33 and 61 are due to naturally occurring variance in SCL – usually a result from skin oils and hair – but the variation between their difference of means is due to each subject increasing the conductance levels of their skin by involuntarily sweating during the game. In this case the higher difference between the baseline and game zones in Subject 33 (0.46541 compared to 0.01662) indicates an increased use of emotion to make the ultimatum decision in Subject 33 rather than Subject 61. In this case both subjects were Player Bs. Finally, this type of within-subject analysis allows me to use the entire sample of players.

Due to the limitations of SCL technology, and using the variables available my hypothesis regarding SCL variation is simply:

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<sup>12</sup>It is possible to normalize (via a Z-Norm procedure) SCL levels but that is not conducted here because it offers little more information about the SCL differences.

- **SCL Hypothesis:** Aggressive individuals will show more emotional arousal during the decision-making process.
  - *Measurement:* High-aggressive individuals will have higher positive increases in SCL measurements during the ultimatum game compared with low-aggressive individuals.

#### 4.2.2.1 Dual Process Theory

To help explain why understanding individual variation in decision-making is important for studying civil conflict in general, and rebels in particular, I offer the Dual-Process Theory (DPT). The DPT is a psychological theory which argues that an individual's cognitive processing can be described as two competing, but necessarily parallel decision-making systems. The theory has a long history dating back to the beginning of psychology, but I follow the widely used and accepted Evans, Over & Manktelow (1993) model which is perhaps best described in Evans (2008). This conceptualization offers two parallel cognitive processes, System I and System II.<sup>13</sup> System I, explained by Osman (2004, p.989–990) is, “essentially pragmatic, is based on prior experiences, beliefs, and background knowledge and achieves goals reliably and efficiently without necessarily accompanying awareness. It is characterized as implicit, associative, fast, and highly robust”. And system II is described as, “explicit, sequential, controllable, and makes high demands of working memory. System 2 ... is capable of achieving solutions to logical problems as well as a range of problem types (e.g., hypothesis testing, hypothetical thinking, forecasting, and consequential decision-making)”.

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<sup>13</sup>The only two articles to use of this theory in conflict studies that I am aware of are Tingley, Lee & Renshon (2014) and Kahneman (2011), but each of these previous works deals directly with foreign policy decision-making and not individual-level behaviors.

System I processes are highly correlated with emotions, and individuals making a decision via a System I process tend to feel an emotion and then justify that decision to explain why they feel the emotion (Haidt, 2001). There are two theories of the role of emotions in System I processing: 1) emotions form a way to navigate for a set of similar decisions; and 2) emotions and the System I processing involve similar parts of the brain (Evans, 2008). The activation of System I processes is generally measured by the presence of emotions because the two are so highly correlated. Distinguishing which emotion (angry, sad, happy, etc.), which is difficult, is not necessary as any emotionate state is considered an indicator of System I processing and physiological measures of general emotionate states are much more reliable and easily obtained. System II activation is generally not measured and considered to be occurring when no System I indicators exist, because all decisions are made via one or the other (or a combination) of the two processes.

In the context of conflict studies, however, it is rare for scholars to use emotion to understand decision making. The notable exceptions are Blight (1992), Rosen (2004) and McDermott (2004). McDermott (2004), in particular, makes the argument that emotion based decision making is not definitively opposed to rationality, but instead is the process by which the brain makes quick decisions. Emotion according to the most recent work on decision-making is as essential to cognition as rationality. Emotion has a physiological foundation meaning that stimuli from the world bring about emotional responses – i.e. the flight or fight response which is triggered by a threat, thus creating fear which is acted upon through adrenaline production. Emotional thought is centered in the amygdala and the entire decision-making process begins within an emotion-based response to whether the current decision threatens survival or not. After all the brain's first responsibility is to ensure the organism's survival. Only after the emotional decision process has rendered the decision as non-threatening are the higher brain functions (located in the pre-frontal cortex) activated. It is, therefore, useful to think of the relationship between

emotion based decision-making (System I) and rational based decision making (System II) as linked in a linear fashion. A decision begins via System I processing and only when the emotional-based system determines the decision is non-threatening does System II take over. This structure requires, by design, that emotion always play a role in rational decision making (McDermott, 2004). In addition, the amount of crossover between System I and System II processing differs across individuals because it results from the amount of neural connections between the amygdala and the rest of the brain. While all people use both System I and System II processing the relative importance of each varies based both on the decision and the person.

### 4.3 Results

To start with some simple descriptive statistics of the game and its outcomes, the experiment consisted of 96 mix-sex subjects divided into 48 pairs. Unknown to the subjects, the pairs were pre-sorted using the subject's aggression scores from the pre-survey to create 3 categories. The 3 categories were High Aggression, Medium Aggression, and Low Aggression pairs. To accomplish this task the subject's aggression scores were divided by thirds and those subjects in the highest third of aggression scores were only allowed to register for experiment time-slots with other subjects from that category. The procedure was identical for the medium- and low-aggression pair groupings. This procedure meant that the experiment contained 16 high pairs of subjects, 16 medium pairs, and 16 low pairs of subjects for a total of, again, 48 pairs. Of the 48 pairs, 68.75% (33 out of 48) reached an agreement on the division of the 10-point allotment. Of the 48 pairs, 34 began with a 2-point offer and 14 with a 7-point offer. In those pairs that began the game with a 2-point offer, 64.7% (22 out of 34) reached an agreement. In those pairs that began the game with a 7-point offer, 78.6% (11 out of 14) reached an agreement. A summary of the

basic statistics is provided in bullet points below.

- 96 total players
  
- 48 pairs of players
  - 16 High Trait Pairs
  - 16 Medium Trait Pairs
  - 16 Low Trait Pairs
  
- 33 Pairs Reached an Agreement
  - 22 from 2 point offers
  - 11 from 7 point offers
  
- 15 Pairs Did Not Reach an Agreement
  - 12 from 2 point offers
  - 3 from 7 point offers

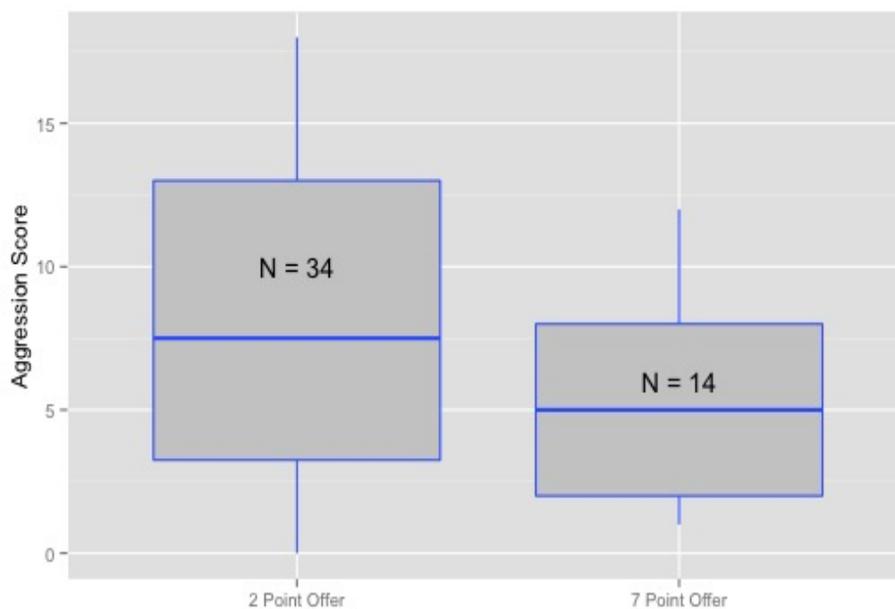
For each subject, the aggression level was estimated using just the aggression measure discussed above, but only the reactive questions were included which created a possible range between 0–22. The mean for the entire sample was 7.2 which is consistent with other samples using the same aggression measuring instrument (Raine et. al., 2006).<sup>14</sup>

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<sup>14</sup>For the Reactive–Proactive Aggression Questionnaire the mean scores for reactive aggression in mixed-sex samples is generally found to be in the 6.5 –7.5 range (Raine et al., 2006). It should also be noted that although there were 47 Male and 49 Female subjects, no significant sex differences were found in the aggression scores or in the game results. Initially this was quite surprising and not what I expected. It is, however, consistent with several other studies on aggression and sex. For example, Hyde (1984) finds in her meta-study that median difference for sex (she calls this gender) in 143 different aggression studies was around 5%, and that differences are even smaller when aggression is measured by self-report (as done here). She also finds that in studies that use just college students (again as done here) the median differences falls to 1%. Overall, her results indicate that little aggression variance is due to sex differences. In addition, Bettencourt & Miller (1996) find that almost all sex differences evaporate in experimental studies that involve economic games. These results are also very similar to studies of aggression and sex by Hyde

As predicted, Player A subjects who made a 2-point offer had significantly higher levels of trait aggression than those Player A subjects who made a 7-point offer. As Fig 1.1 indicates, the 34 subjects who made the 2-point first-round offer ( $N = 34$ ) had a mean aggression score of 8.4, compared with a mean score of 5.6 for the 14 subjects who made the 7-point offer ( $N = 14$ ). The difference between the two mean scores is statistically significant at the 95% confidence level using a one-tailed Difference of Means T-Test ( $p < 0.04$ ). This result supports the first measure of the Aggression Hypothesis in section 4.2.1. Trait aggression does indeed predict a more hostile opening move in the game

Figure 4.1: A Player A Offers



In addition, the subjects who rejected the low (2-point) ultimatum game offers had significantly higher levels of trait aggression than those who accepted. As Figure 4.2 indicates, the 12 subjects who rejected the offer ( $N = 12$ ) had a mean aggression score of 9.7, versus

(2005) and Feingold (1994). Finally, the lack of sex differences in my aggression scores and game results may also be a consequence of pre-experiment selection. For instance, highly aggressive men might be less likely to go to college than highly aggressive women which may equalize aggression in the sample. Or perhaps the fact that all subjects came from political science courses may also select in or out aggressive individuals along sex lines.

a mean score of 5.6 for those 22 who accepted ( $N = 22$ ). Again, the difference between the mean scores is statistically significant at the 95% confidence level using a one-tailed Difference of Means T-test ( $p < 0.00$ ). This result supports the second measurement of the Aggression Hypothesis in section 4.2.1. As predicted, subjects who made and rejected the low ultimatum game offers (2 out of 10 points) had significantly higher aggression levels than those who made the higher offer or accepted the low offer.

Figure 4.2: Low Offer Responses



Results in this Chapter indicate that aggression is correlated with higher levels of rejection and higher initial offers in an ultimatum game. This finding shows that trait aggression, at least in part, plays a role in negative reciprocity in an experimental environment constructed to make both negative (but not positive) reciprocity possible. It is important to note that in games or events where more interaction is possible the role of trait aggression could change. It is possible, for example, that subjects who punish their partner by refusing low offers could develop negative reputations and may, therefore, alter their behavior as a consequence. The results presented here are consistent with

similar work by Burnham (2007) on testosterone-level differences and with the results of Sanfey et al. (2003) who finds increased neural activation in subjects who reject low ultimatum game offers.

As predicted, the groups of players also varied in their propensity to reach an agreement. The groups, however, did not vary in the manner predicted. As Table 4.1 illustrates, pairs with two high-trait aggressive individuals reached an agreement in 62.5% of the games (10 out of 16) while pairs who contained two low-trait aggressive individuals reached an agreement in 56.3% of the games (9 out of 16). Medium-aggression pairs had the highest level of accord with 87.5% of the games (14 out of 16) reaching an agreement. This result does not support the third measure of the Aggression Hypothesis in section 4.2.1. While it is impossible to definitively know, it is likely that this null result is due to a lack of player interaction. The experiment was a one-shot game with each player only making one decision. This design limits the ability of any pair structure to produce reliable data. In an iterated game setting it is quite possible the result would be different as pairs of high aggressive individuals interact over multiple rounds.

Table 4.1: Agreement Reached

High Aggression Pairs	62.5%
Medium Aggression Pairs	87.5%
Low Aggression Pairs	56.3%
Note: There were 16 pairs in each group	

### 4.3.1 Skin Conductance Level Results

SCL was measured during a 3-minute baseline period while the subjects watched a calming video and for an approximately 7-minute baseline period while the subjects read the game instructions and asked relevant questions. The measurement device was placed on

the inside wrist of the subject's non-dominant hand. The SCL device measured skin conductance using a constant (0.5V) voltage which was converted to a time-series data format at a rate of 32 readings per second. Values of the skin conductance were transformed into microsiemens values using software provided by the Affectiva Company. Microsiemens are a unit of electric conductance. Averages (expressed in microsiemens) for SCL during the two baseline periods and game period were calculated. The two baseline periods were combined to create an average SCL baseline. SCL differences during the game, and therefore during a decision, were obtained by subtracting the SCL baseline from the SCL while the game was being conducted. SCL data were not available for four of the subjects because of device failure over a large portion of one or more of the measured time zones. These subjects were excluded from the SCL results, therefore, the number of subjects with SCL results is 92.<sup>15</sup>

Mean SCL rates for the video, instruction and game periods for all subjects are shown in Table 4.2. As predicted, subjects with the high levels of trait aggression had greater increases from their baseline levels in skin conductance levels when compared to subjects with medium or low levels of trait aggression. As the red highlighted cells in Table 4.2 indicate, only the subjects in the high-aggressive category showed a significant difference between their levels during the combined baseline measurements and the measurements taken during the game ( $p < 0.05$ ). This finding supports the SCL hypothesis and indicates that high-aggressive individuals do cognate with more emotion than medium- or low-aggressive individuals. This finding is consistent with prior work demonstrating increased neural activation with low-ultimatum game offers and all ultimatum rejections (Stanfey et al., 2003). In this article the authors argue that evolved psychology mecha-

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<sup>15</sup>Note here that my SCL results show no influence of sex on autonomic emotional responsiveness measured by SCLs. This is consistent with most studies using skin conductance including Bradley et al. (2001), Mardaga, Laloyaux, & Hansenne (2006), and Mardaga & Hansenne (2015). This does not fully suggest that sex has no influence on emotional responsiveness but instead that the influence might depend upon stimulus characteristics that a simple economic game does not reveal.

nisms designed to create reciprocal altruism also create emotional responses to unequal divisions. A discussion on the implications for these results and future follow-up studies are offered in the next section.

Table 4.2: Mean SCL Rates by Aggression Category

	Video	Instructions	Weighted Avg	Game	<i>p</i>	<i>T-Test</i>
All N = 92	6.871442	6.870518	6.870920	8.036438	0.28	1.085
High N = 31	6.826896	6.824552	6.825724	9.951484	0.04	2.07
Medium N = 32	8.942759	8.942597	8.942678	9.158281	0.92	0.097
Low N = 29	4.479566	4.479316	4.479441	4.594036	0.94	0.076

Note: The *p* and *T-Test* values were obtained via one-sided T-Test on the entire sample of subjects in each category not the means as reported in the table.

Note: All values in columns 1-4 are reported in microsiemens.

## 4.4 Discussion

In this chapter, I address one main question: Is there variation in the decision-making process between high-aggressive individuals and low-aggressive individuals? In Chapter 3, I find that high-trait aggression is likely to be present in individuals who voluntarily join a rebel group, which necessitates the follow-up question of: so what? Understanding the differences in how high-aggressive individuals and low-aggressive individuals make decisions is part of the answer to that question and is also, therefore, likely to have policy-relevant implications. This chapter aims to clarify that high-trait aggressive individuals do in fact make different decisions compared to low-trait aggressive individuals. The major findings reported here are that higher levels of trait aggression correlate with the willingness to make offers that are seemingly unfair and the willingness to forgo ben-

efits in order to punish playing partners.

Furthermore, I provide evidence that high-trait aggressive individuals also show increased neural activation in areas of the brain associated with System I decision-making compared to low-trait aggressive individuals. The takeaway conclusions from these findings are that incorporating an understanding of individual-level preferences generated by personality variation is the next step in models of rebel joining and rebel behavior. In the past, conflict scholars have largely ignored the individual, but the findings of this chapter and the previous indicate that individual-level variations exist in rebel groups and that these variations matter during decision-making. In addition, the findings in Chapters 3 and 4 indicated that we can and should incorporate individual-level preferences into rational-choice models and that we can do so without being tautological.

There are a number of ways this work can be extended that are likely to be worthwhile. First, correlations between testosterone and trait aggression are quite high. The findings reported here are encouraging for researchers who are interested in how levels of testosterone alter negotiations, but lack the ability to easily test testosterone levels. Survey trait-aggression measures are both reliable and valid even in subjects with a history of violent actions, as shown in Chapter 3, and an interesting follow-up study would be to examine trait aggression and ultimatum game play in populations of former rebels, especially if pre-survey indicators on their willingness to rejoin the group or reintegrate back into society were also obtained.

Second, an obvious extension would be studying aggression in other games important for conflict studies, such as the 'dictator game', 'prisoner's dilemma', 'public goods game', or the 'trust game'. Using trait aggression is novel for conflict research but previous work has been concerned with the origins and consequences of aggressive behaviors.

For example, McDermott et al. (2009) found that the presence of the MAOA-L gene – sometimes referred to as the ‘warrior gene’ or ‘violence gene’ – predicted aggressive behaviors in ultimatum and trust games, but the researchers were also left wondering “how and why individual genetic differences cause different behavioral outcomes” and “what might be the underlying psychological phenomena at work?” (p.2,121). In this experiment, I find evidence that the process questioned by McDermott et al. probably works through individual differences on trait aggression (and probably other personality traits). Although the results suggest that trait aggression plays a role in a scenario similar to those witnessed in wartime, a major question remains as to how and why these individual differences affect group-level behavior. In other words, what might be the effect of trait aggression on decisions in a group with a disproportionately large number of highly aggressive individuals? Groups of aggressive individuals probably act differently than groups with a mixture of trait-aggression levels, but exactly how this process works and in what magnitude is unclear. The aggressive behavior of groups may simple be a result of an additive process compiling all the individuals together or, perhaps, a spiraling circle of aggression occurs. More research on the individual-to-group-level transition is needed, and all these questions are ripe for future research in both the lab and the field.

Third, some recent work in behavioral economics has shown an increase in levels of generosity in players of economic games who meet face-to-face before play begins. It is quite possible that this increase is moderated by levels of aggression or other personality traits. If, however, high-trait aggression individuals increase levels of generosity from pregame face-to-face interaction then this is a clear example of how this avenue of research can become policy relevant. For example, if in subsequent experiments I discover that high-trait aggressive individuals are most likely to come to an agreement following pregame interaction then I can recommend to practitioners that conflict negotiations begin with social interactions that do not directly address the conflict.

Finally, this work has been largely exploratory, meaning the application of personality to conflict is just beginning. I choose the ultimatum game to create a clean decision framework so results would be easily interpreted and their applications clear. In addition, I limited the analysis to trait aggression only so that the results would relate to the available data and analysis in Chapter 3. There are, however, several additional relationships that need to be tested, such as how the results change in an iterated game and how, what role additional personality traits play, and if high-aggressive individuals cope for their initial performance with different strategies in other interactions.

In this chapter, I have demonstrated that decisions which refute economic-utility theory are influenced by the presence of high-trait aggression. Accounting for characteristics of individuals means that additional forces are at play alongside economic utility when people make decisions. Rational-choice research as applied to conflict studies has yet to seriously embrace this type of thinking because variation of this type forces a reconsideration of the concept of utility. If this variation is contained, even partially, in a systematic and measurable concept like personality, however, then accounting for personality means being able to better model the actual preferences of sorted groups such as rebels. It is my hope that the findings in this chapter and the previous one will encourage scholars to broaden their view on using rational-choice models to understand rebellion. Personality traits even exert an influence in purely economic games and this should give us confidence about the importance of individual psychological variation in understanding decision-making. The results of this chapter are an early step in that process, but much more work is necessary to fully understand the role of personality in rebellions.

# Chapter 5

## Military Enlistment

Chapters 2, 3, and 4 all address the decision to join a rebel group in one form or another. Even though these results are limited to only trait aggression, they do show the utility of studying personality traits in conflict research. To some, these findings may emphasize the importance of studying personality only in the context of rebellion, while to others, the decision to join a rebellion may simply be fundamentally different than studying other conflict related topics. The goal of this chapter is to dispel those notions and to demonstrate that studying personality traits is important for a variety of different topics conflict scholars are trying to understand. In this chapter, I, therefore, turn away from rebel groups and civil conflict and instead examine whether personality traits can also be a reliable predictor of voluntary enlistment in a traditional state military.

Similar to the study of rebellion, the question of ‘why do some individuals decide to enlist in the military while others do not’ has received some general empirical research. This research has focused, again like that of rebellion, on the role that family background and external socio-economic factors have on enlisting. The results of these studies have revealed a plethora of variables that predict enlisting in the military. These include sex, high-school grades, race, parental income, general education levels, and antisocial behavior (Bachman et al., 2000; Gibson, Griepentrog & Marsh, 2007; Jackson et al., 2012; Segal et al., 1999; Beaver et al., 2015).

At least since Janowitz’s work (1960) there has been ongoing debate particularly about

who joins the U.S. Armed Forces, which switched from a mixture of volunteer and conscription (drafted) personnel to an all-volunteer force in 1973. Therefore, questions about the enlistment of young people have arisen particularly focused on the circumstances and characteristics of enlistees and why some young Americans enlist in the military rather than attend college or seek a non-military job.

The current levels of U.S. military service personnel, about 1.2 million, means that about 200,000 new enlistees are needed each year just to maintain a stable active-duty force. Recruitment is further hindered by youth seeking higher education and civilian job opportunities and the seemingly continuous warfare of the past 15 years that may deter would-be recruits from joining. In fact, since 1973, recruiting has been easiest during peaceful times of economic downturn (Eighmey, 2006). Nevertheless, the U.S. military has routinely met its enlistment goals even though American youth have shown an increasingly downward trend in their propensity to volunteer for military service (Woodruff, Kelty & Segal, 2006). Two recent studies of youth enlistment in the military have revealed a set of motives cited by the enlistees themselves: economic factors, service to country, escape from current situation, adventure, opportunity for travel, self-improvement, and money for education (Eighmey, 2006; Bachman et al. 2000). In addition, and perhaps unsurprisingly, a desire to serve the country expressed during high school has been shown to be a particularly strong predictor of actual enlistment after graduation (Woodruff, Kelty & Segal, 2006).

What little work that does directly assess personality traits in traditional militaries focuses on actual commanders or those predicted to be a leader. This research generally falls into two categories: 1) attempts to identify which traits create leaders instead of followers; or 2) attempts to understand the traits that lead to successful leadership as opposed to unsuccessful leadership (Yukl, 1992; Hunt, 1985; Hogan, Curphy, & Hogan,

1994; Lillibridge & Williams, 1992). Like a lot of early personality work, this work is hampered by theoretical limitations resulting from a lack of a standard conceptualization of personality. Traits in these studies were often given different labels even though they were ascribed to the same or similar observations. Relatively recently, however, the rise of the five-factor model (FFM) has given military leadership research a stable taxonomy for understanding the role of personality.<sup>1</sup>

Using a sample of 1,261 German adolescents and a multi-Wave survey, for example, Jackson et al. (2012) find that low levels of three personality traits (agreeableness, neuroticism, and openness to experience) predict choosing military service over civilian service. These findings, however, are a byproduct of the paper's main goal – which is to understand how military service alters personality traits rather than the other way around – because a baseline level of traits were a necessary component of their modeling procedure. In addition, Beaver et al. (2015) find that genetic similarity also correlates with self-selecting into the U.S. military using a twin-based study of adolescents. Beaver et al. (2015) also note, on p. 2, that their genetic findings most likely exert their influence through individual-level traits like personality. Even with this wide range of research a significant proportion of variance in military enlistment remains unexplored or under-explored.

## 5.1 The FFM and Enlistment

Over the past twenty-five years, personality psychologists have reached a consensus that most of a person's personality can be summarized by what is called the Big Five

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<sup>1</sup>The legitimacy and consistency of the FFM has been supported by numerous studies in a variety of fields. For a good summary of the model see Costa & McCrae (2008), Digman (1990) and McCrae & Costa (1990).

personality traits (McCrae & Costa, 1997; McCrae et al., 2005). Described in Table 5.1 these five personality traits are openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. Openness to experience is related to having and wanting a complex mental and experiential life (John, Naumann and Soto, 2008). Conscientiousness is related to having a high degree of control over impulsive behavior and being a task-oriented person. Extraversion is related to positive emotionality about the world and seeking out new experiences. Agreeableness describes a communal or prosocial orientation. Finally, neuroticism, sometimes referred to, although with an inverted scale, as ‘emotional stability’, can be thought of as ‘nervousness’ or ‘tenseness’ and particularly as ‘emotional’. Each of these traits are generally measured using a set of scaled questions that produce varying but stable readings on each individual – i.e. Jane is high on neuroticism, and low on conscientiousness.<sup>2</sup>

The Big Five personality model have a long history that dates back to at least the 1940’s and Raymond Cattell’s sixteen factor model for normal personalities (Cattell, 1946). The currently Five Factor model (FFM) is most notably associated with the joint work of Robert McCrae and Paul Costa beginning with their reintroduction of the model in 1985 (McCrae & Costa, 1985). McCrae and Costa have both established the stability of the five factors from childhood to adolescence and on to adulthood and established that the five factor model is transferable to most, if not all, cultures around the globe (Costa & McCrae, 1994; McCrae & Costa, 2008). In fact, it is not out of bounds to say the modern use of personality traits in psychology research is based around adding or subtracting different traits to the Five Factor model depending on the researcher’s particular question.

In this chapter, I examine what personality traits lead some young men to choose military

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<sup>2</sup>The FFM of personality was not included in the analysis of Chapter 3 because no FFM questions were asked in the GAGS or North Kivu surveys. It is included in this chapter because questions are available for U.S. Military Enlistment and I also plan on including FFM questions in future projects examining personality and rebels (see section 6.4 for a description on these plans.

Table 5.1: The Five-Factor Model of Personality.

Trait	Description
Neuroticism	Related to anxiety and opposite of emotionally stable
Extraversion	Associated with enthusiasm toward life's circumstances or outgoing
Openness to experience	Associated with the willingness to have new experiences or new ideas
Agreeableness	Related to an inclination toward submission to others and subduedness
Conscientiousness	Related to being reliable and responsible

Note: Descriptions developed from Digman (1990).

service and some do not. That question is analyzed using a cross-sectional and longitudinal panel survey dataset obtained from a large nationwide sample of youths from the United States.

## 5.2 Research Design

In this chapter, I employ the National Longitudinal Study of Adolescent Health (Add Health) dataset which is widely used in multiple social-science disciplines. The dataset is a longitudinal study with multiple waves beginning in 1994. The researchers used in-home, in-school, and school-administrator questionnaires and interviewed adolescents in Grades 7 through 12 during the initial wave, followed by three additional waves with the last conducted in 2008.<sup>3</sup> The first wave of the study selected 80 high schools from a frame of over 26,000 possible schools. The schools were not chosen at random and were instead selected based on size, census region, urbanization, and percent of white students. Participating high schools were then asked to self-identify the junior high schools that served as their feeder schools. From this list an additional 65 schools were added, making a total of 145 junior high and high schools. An initial sample of over 20,000 adolescents were drawn from these schools, comprising of a core of 12,105 randomly selected

<sup>3</sup>Wave 5 is scheduled to be implemented sometime between 2016 and 2018.

students plus several oversampled sub-groupings. The survey, to date, has produced four waves of interviews. Wave 1 was the original 45-minute questionnaire. Wave 2 (1996) consisted of a set of in-home interviews with 14,738 students from the Wave 1 sample. Wave 3 (2001–2002) consisted of in-home interviews of 15,170 students from Wave 1 and was the first time any military-enlistment questions were asked. Finally, Wave 4 (2008) consisted of an in-home interview with 15,701 participants from the Wave 1 sample and also included military-enlistment questions.

The relevant waves for this analysis are Wave 1 (personality data) and Wave 4 (military enlistment data).<sup>4</sup> The Add Health survey consisted of a nationally representative sample of youth from the United States. Of the 20,745, Wave 1 respondents, approximately 54% self-identified Caucasian, 19% were African-American, 16% were Hispanic, 7% were Asian-American, and 3.5% were Native American, with the remaining participants not identifying their race. The approximate ratio of race representation was maintained in Wave 4, but the number of respondents dropped to 15,701, ranging from 24 to 32 years in age (Harris et al., 2009). Information about the data, samples, and subsamples can be found at <http://www.cpc.unc.edu/projects/addhealth>. In addition, Resnick et al. (1997) provide details on the sampling procedures used to collect the original Wave 1 data.

### 5.2.1 Data

Using the subjects interviewed in Wave 4, which by necessity were also included in Wave 1, I began with a total of 15,701 subjects. The drop from 20,745 subjects in Wave 1 to 15,701 subjects in Wave 4 is due to normal attrition rates including the death of subjects, inability to locate subjects, and unresponsiveness of subjects. Restricting the data to

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<sup>4</sup>Although military-enlistment questions were asked in Wave 3, I chose to use the enlistment data from Wave 4 because it allowed the subjects another 6–7 years to choose to enlist.

only males with non-missing information on both the dependent and independent measures of interest, as well as those who were eligible for military service (i.e. those who fit the cognitive and physical abilities and criminal backgrounds accepted by the U.S. military) left a total of 6,971 subjects. The exclusion criteria for those “fit” for military service was taken from Beaver et al. (2015) and includes scores on cognitive aptitude tests (to meet minimal intelligence standards) and body-mass indices (to meet minimum physical-fitness standards). I also chose to exclude female subjects because while more and more women are entering the armed forces, the military is still dominated by males. In addition, Bachman et al. (2000) and Murray and McDonald (1999) find that, while similar in kind, female and male enlistments have different socio-demographic correlations (suggested by Elder et al., 2010). Consequently, because socio-demographic variables also align with personality traits, women were excluded from the study.

Table 5.2 offers the basic descriptive statistics for subjects who enlisted in the military and those who did not. Of the 6,971 male subjects fit for military service, 714 (10.24%) voluntarily enlisted.<sup>5</sup> In addition, to the dependent and independent variables described below, I also include the subject’s race and parental education level. Each of these two factors as been found in previous studies to be a significant predictor of enlistment as well as highly correlated with other predictors of enlistment (i.e. number of parents, household size, income level, etc.). As Table 5.2 shows, the two samples are relatively equal on the race variables with the military sample having a small increase in only the black and Hispanic rows. In addition, the military enlistment sample also shows a higher percentage of adolescents whose parents have a college degree. This increase is caused by the removal of subjects based on the “fit” criteria which sharply favors subjects whose parents only have a high school or less education level.

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<sup>5</sup>This is similar to other U.S. studies that find that among eligible males approximately 10% enlist in some branch of the Armed Forces (Elder et al., 2010).

Table 5.2: Descriptive Statistics for Demographic Data ( $N = 6,971$ )

	Non-Military ( $n = 6,257$ )		Military ( $n = 714$ )	
	N	%	N	%
<b>Race/Ethnicity</b>				
White	3288	52.55	339	47.48
Black	1220	19.50	171	23.95
Asian	416	6.65	42	5.88
Hispanic	1021	16.31	134	18.77
<b>Parent Education</b>				
HS or Less	3047	48.78	304	43.30
College or More	3201	51.22	398	56.70

Note: 312 (4.99%) Non-Military and 28 (3.89%) Military subjects did not list race/ethnicity

Note: The Non-Military Parent Education variables contain 9 missing entries

Note: The Military Parent Education variables contain 12 missing entries

### 5.2.1.1 Dependent Variable

Military service was measured via a dichotomous variable that represented whether a respondent had ever served in the military. This question was asked during the Wave 4 interviews in 2008. If the respondent indicated she had ever been in the military (all branches including the Coast Guard) a value of “1” was assigned, otherwise the respondent was given a value of “0”. In addition, subjects who were unavailable for interviews because they were deployed on active military duty during Wave 4 were also assigned a value of “1”. By the fourth wave in 2008, 714 subjects of the 6,947-subject sample, 10.28%, had served or were serving in the U.S. Armed Forces. Included in the 714 subjects were some subjects who served in the Reserves or National Guard, but this sub-group accounted for only 14 percent (100 out of 714) of the total service members.<sup>6</sup>

In addition to being contemporary and ongoing, there are two major advantages in using

<sup>6</sup>As a robustness check all models were run with and without the Reservist or National Guard members and no significant differences were observed.

Add Health to study personality and enlistment. First, Add Health has been used in several other studies, with Elder et al. (2010) being the most relevant, to examine what social measures correlate with enlistment. This information allows me to include their relevant findings in understanding the role of personality and, therefore, to further minimize the confounding variables. Second, the data cover a considerable period of time after the age of 18 which allow the subjects ample time to enlist other than immediately out of high school. Previous studies on enlistment in traditional military, with or without personality, have tended to focus on enlistment directly after finishing high school. This can lead to incomplete findings as people often enlist well into their early 20s. In fact, Woodruff, Kelty & Segal (2006) show that the peak years for enlistment in the U.S. Armed Forces are between 18 to 24 with a significant drop-off in enlistment rates starting around age 25. At the time of Wave 4 interviews, all of the subjects had passed or almost passed this peak time, being aged 24-32.

One significant flaw in using Add Health, however, is that the survey does not contain timing information for military enlistment. This means there is no way to determine whether subjects entered the military before or after college and, therefore, to determine if they entered as an enlisted personnel or a commissioned officer. A significant number of respondents do list both attending college and enlisting in the military (N = 274). Attending college and entering the military are related because most U.S. Military officers come from college Reserves Officer Training Corps (ROTC) programs and college graduates who are not in ROTC are still more likely to attend officer training school once in the military. Therefore, it is likely that some ROTC and other service academy members are included in the data. Overall, however, the number of military officers in Add Health is probably small (less than 50 based on age of the respondent) because a large number of the respondents also list "paying for college" as one of the reasons for enlisting. Because the data are unreliable or unavailable, I draw no differences between

enlistees and officers but I also do not expect the small number of officers in the sample to significantly change the results.

### 5.2.1.2 Independent Variables

5.2.1.2.1 NEO Originally designed to collect data on the physical and mental health of subjects and their families, the early Waves of Add Health did not include direct measures of personality traits. Instead, Add Health was originally designed to investigate how individual factors and social context influence adolescent and early-adulthood health and risk behaviors. For this reason, Wave 1 questions were primarily related to the physical and mental health, interpersonal relationships, risky behaviors, delinquency, and education of the subjects. In addition, questions about the subject's environments – home, work and school – were also asked.

To facilitate the use of such an extensive survey in studying personality, however, Young & Beaujean (2011) developed a measure of the Big-5 personality traits from questions that were asked in the initial interviews. For a complete examination of how they accomplished this, see Young & Beaujean (2011) directly, however, I would like to note that their reliability estimates (alpha scores) are all above .75 which is consistent with the scores of typical personality instruments. To determine if any of the Add Health questions had a lexical design similar to a FFM questionnaire, Young & Beaujean (2011) matched the questions against the often-used NEO Personality Inventory-Revised (NEO-PI-R); (Costa & McCrae, 1992). Their findings indicate that 13 items from Wave 1, each measured in a 9-point Likert scale, could proxy well for a Big-5 instrument. These questions, however, only provided information on 3 of the 5 traits – neuroticism (6 items), extraversion (3 items), and conscientiousness (4 items).

In addition, Add Health directly employed a 20-item IPIP survey developed by Donnellan et al. (2006) during Wave 4 in 2008. This was performed on all the Wave 4 subjects (i.e. the 15,701 subjects remaining from Wave 1). While using results from the Wave 4 questions to predict answers to military-enlistment questions, which were only asked in Wave 3 and Wave 4, is tautologically problematic, Young & Beaujean (2011) do offer comparisons between their measures of the Big-5 traits and those directly measured in Wave 4. These comparisons show high levels of correlation and the predicted directionality with their measures from the Wave 1 questions. In the analysis below I follow their advice and employ personality measures from Wave 1 on only neuroticism, extraversion, and conscientiousness.

**5.2.1.2.2 Aggression** A measure of aggression was also extracted from the Add Health dataset. The aggression variable was created using a four-item scale of self-reported aggressive behavior. The scale was computed using the frequency with which the subjects engaged in the following behaviors in the past year; 1) got into a serious physical fight; 2) hurt someone badly; 3) used or threatened to use a weapon; and 4) took part in a gang fight. The responses were scored using a range from 0 (never) to 3 (five times or more). Items were averaged to create a score for each respondent ( $\alpha = .75$ ).<sup>7</sup> To be clear, this is not measuring the same “trait-aggression” concept as discussed in Chapters 3 and 4, but it can give an indication of the relationship between aggression and enlisting.

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<sup>7</sup>This measure is identical to the one created by Row, Almeida, & Jacobson (1999) although they only employed it on the sample of biologically related individuals contained in Wave 1 of Add Health.

## 5.3 Results

The main model of this chapter employs a Probit regression on the dichotomous enlistment variable, where any enlistment receives a score of “1” and all other observations a “0”. In Wave 1 of the Add Health survey the main sub-samples identified and over-sampled were pairs of siblings. This included all twin pairs, full siblings, half-siblings, and unrelated siblings raised in the same household. The main purpose of this design is to allow for the comparison of siblings while holding the home environment constant, therefore, reducing the potential omitted-variable bias in studying the relationship between personality and any behavior. Including this in the data is also a powerful way to account for biological causation in studying any behavior and the sibling-pairs sample is similar in demographic composition to the full Add Health sample (Jacobson & Rowe, 1998). In fact, as I stated above, Beaver et al. (2015) utilize the sibling data to find as much as 82% of the variance in lifetime-military service results from genetic components.<sup>8</sup> The structure of this data, however, also means the observations are non-independent. To account for this non-independence and following the advice of De Neve (2015), I cluster on the standard errors on siblings to better account for non-independent observations.

Based on the discussion of aggression in Chapters 2, 3 and 4, it is expected that aggression will be strongly associated with enlistment. In addition, based on the description of the personality traits provided above in this chapter and previous work on personality and behavior, it is also expected that extraversion will be strongly associated with enlistment and that neuroticism will be associated with non-enlistment. Results of this analysis are presented in Table 5.3 and they corroborate the expectations in the case of aggression and extraversion. In the case of neuroticism, however, an association with lower levels and enlistment is found. Table 5.3 also illustrates an extension of the findings and arguments from Chapters 2-4 in the results of the model. The results indicated that ag-

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<sup>8</sup>Note that this is lifetime-military service and not simply the initial decision to enlist.

gression significantly predicts enlisting in the U.S. Armed Forces ( $p < 0.000$ ). Additionally, in corroborating and extending the findings on the Big-5 in psychology, the results also indicate that extraversion significantly predicts enlisting ( $p < 0.000$ ) and that neuroticism is significantly related to not-enlisting (negative coefficient) in the U.S. Armed Forces ( $p < 0.03$ ). Openness, however, does not produce a significant effect of enlisting, although it is in the predicted direction. Adolescents who eventually enlisted in the military were overall more aggressive, more extroverted, and less neurotic than their non-enlisted counterparts. These results suggest that personality traits do play a moderate but significant role in the decision to enlist in the U.S. military. Similar to previous studies, black and hispanic males were more likely to join the military. According to Woodruff, Keltly & Segal (2006), the increased percentage of black and hispanic enlistment is due to a failure of a larger percentage of black and hispanic males to qualify for military enlistment. In simpler terms, a larger percentage of black and hispanic males are removed from the sample due to the “fit” criteria than white or asian males. The remaining significant results in the sample, therefore, probably represent a selection bias process and not a true increased likelihood of black and hispanic males enlisting in the military. Finally, parental education was found to be a negative predictor of enlistment suggesting that adolescents whose parents have college degrees are less likely to enlist.

## 5.4 Discussion

An increasing body of literature and evidence suggests that there are inherent differences between those individuals who voluntarily choose to join military units and those who do not (Bachman et al., 2000; Gibson, Griepentrog & Marsh, 2007; Jackson et al., 2012; Segal et al., 1999; Beaver et al., 2015). However, with the exception of Jackson et al. (2012), this research fails to account for personality traits being one of those differences. The study reported in this chapter is, therefore, among the first to examine the relation

Table 5.3: Probit Model of Enlistment on Personality and Control Variables ( $N = 6, 971$ )

<u>Enlistment</u>			
	Coef.	SE	<i>p</i> -value
Neuroticism	-0.013	0.002	0.024
Extraversion	0.012	0.002	0.000
Openness	-0.035	0.003	0.104
Aggression	0.065	0.003	0.000
White	-0.01	0.074	0.129
Black	0.103	0.068	0.000
Asian	-0.040	0.081	0.289
Hispanic	0.074	0.020	0.014
Parent Edu	-0.035	0.004	0.080
Intercept	- 2.648	0.294	0.000
<i>Pseudo R</i> <sup>2</sup>		0.12	

between personality and military enlistment. The data confirm that personality variation does play a role in enlisting in the military. For example, if we were examine two individuals from the same race, both with parents with high-school education, then according to the results, the individual with a higher level of aggression and extraversion would be more likely to enlist in the military. The Add Health data provides an opportunity to include personality in the study of enlistment. The findings that more extraversion and less neuroticism predict enlistment is similar to Jackson et al. (2012). The findings on aggression, however, are novel. Neither Jackson et al. (2012), or any other literature I am aware of, directly tests a measure of aggression and joining the U.S. military.

Higher levels of aggression and extraversion are likely to be especially beneficial in a military context. For example, aggressive behavior is associated with the training of soldiers (i.e., weapon training, combat tactics, etc.) and high levels of aggression may improve

the performance of recruits. In addition, high levels of aggression have also been shown, unsurprisingly, to correlate with quick aggressive decisions when primed with aggressive cues (Meier, Robinson, & Wilkowski, 2006). Therefore, individuals who are high on the aggression scale may react quicker and with more force in life-or-death situations. Obviously this is, however, a monotone view of the role of military personnel. It may be that officers have less need for quick aggressive behavior or that enlistees have higher levels of aggression than officers. This level of nuance is unavailable from the available Add Health data, but it is ripe for further exploration.

Finally, in high-school youths, other studies have shown that prior attitudes or beliefs about “serving my country” and the “role of the military” can accurately predict enlistment. (Woodruff, Kelty & Segal, 2006). Yet, we also know that attitudes and beliefs, particularly those about the role of government, are also heavily influenced by personality traits (Mondak, 2010). The analysis above leads me to conclude that, like most other behaviors, prior findings about the attitudes or beliefs of enlistees are partially driven by differences in personality. According to the results individuals with high levels of aggression, high extraversion and low neuroticism are likely to enlist, but, while it isn’t testable using the Add Health data, I also contend that that those same traits highly correlate with attitudes or beliefs about “serving my country” and the “role of the military”. Enlisting in the military is a combination of external environmental factors and internal biological factors. Personality, being a combination of both, therefore, probably operates by helping to create positive attitudes about being in the military and beliefs about the proper role of the military that Woodruff, Kelty & Segal (2006) and others have observed.

### **5.4.1 Limitations and Future Research**

Although this chapter uses a large and nationally representative sample, some limitations should be kept in mind while considering these findings. First, despite the size of Add

Health data, some concerns about the generalizability of these results remain. It is possible that in other countries or in other militaries, different personality traits better predict enlistment, or that in a military with a higher degree of casualties personality play a different role. Or even that in some other context, although unlikely, personality does not predict enlistment. Second, the U.S. Armed Forces is an all-volunteer force, while in countries with conscription, selection effects may enhance or mitigate the role of personality. Third, the above analysis excludes agreeableness and conscientiousness because of data unavailability. It is entirely probable and even likely that both of these excluded traits play a role in enlistment and, in fact, Jackson et al. (2012) find a high correlation between low agreeableness and non-enlistment in the German military.<sup>9</sup> Finally, the U.S. military is a vast institution with significant job variation. The role of personality in enlistment is probably heavily contingent on the type of military specialization the individual envisions. Future research should focus on understanding the variation in the personalities that self-select into different types of military specialization. For example, those self-selecting into infantry units, particularly special operations, may be different than those selecting into non-combat units.

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<sup>9</sup>This finding does partially support my results as agreeableness is sometimes found to be inversely related to aggression. Therefore, finding high levels of aggression in enlistees is, at least partially, consistent with finding low levels of agreeableness.

# Chapter 6

## Conclusion

Individual differences matter. They matter for understanding which people vote, which people join political parties, and which people rebel. Individual differences are also expressed – at least partially – in personality traits and, therefore, personality traits matter. Personality is formed by our genes and impacts the way we see and interact with the world. We select organizations, environments, and behaviors – whether consciously or subconsciously – because of our personality traits. The opportunity now exists for the inclusion of personality to benefit the study of rebellion and civil war. Part of that benefit is in developing a more comprehensive and more informative theory of which individuals rebel. In addition, understanding more about which individuals make up rebel groups and how they behave will also help us understand and predict rebel group behavior.

At the beginning of this dissertation, I began with a hypothetical story of three friends living in Benghazi before the 2011 Libyan civil conflict – Abdoul, Bouba and Farag. At the end of that story I argued that the current theories of rebel-group participation could not adequately explain why the three friends, who were all of the same ethnic, religious, and economic groups, made different decisions about participating in the revolution. This dissertation has begun by telling us that the reasons they all made different decisions is likely, at least partially, a result of internal personality variation between the three friends. Bouba, the friend who joined the rebellion, would likely have a high level of trait aggressiveness, while his friends Abdoul and Farag do not.

As conflict scholars we have done a solid job of observing civil wars and cataloging the characteristics of their onset, duration and termination (i.e. ethnic cleavages, mountainous terrain, third-party involved settlements), but that external variation can only take us so far. A new agenda needs to take root that pays just as much attention to the internal variation of those who actively participate in civil war. This dissertation is a first step toward creating that new agenda and one that I hope is developed further by myself and others. In bringing personality to rebellion scholarship, I am not alone. Instead, I stand firmly on the shoulders of others, with one foot on the foundation laid by those who developed the concept of personality and its relationship to behavior, and the other foot on the foundation laid by those who studied rebel group actors and actions.

As a subfield, conflict studies is ripe for the further application of findings from psychology, biology, and behavioral genetics. In the past, the study of conflict has been greatly improved by understanding how the structural dynamics of a state or region create or constrain the choices of potential rebels. It is time, however, that we also understand that interacting with those dynamics is heavily influenced by internal variation as well. Genetic variation resulting from evolution is part of what produces our behavioral outputs. This variation is used to explain voter participation, public opinion, the behavior of leaders, or political ideology, and it can also explain participation in war.

## **6.1 Summary of Dissertation**

The three empirical chapters provide positive results regarding the correlation of high levels of aggression and participation in conflict. The findings of each chapter, summarized below, suggest that individuals with high levels of trait aggression will volunteer for combat more than those with low levels, and that they process and calculate the cost

and benefits of decisions differently than their low-aggression counterparts.

### 6.1.1 Research Question and Theory

Chapter 1 introduced the major research question of this dissertation: *Why do some people become rebels while others do not?* In addition, the opening chapter began with a hypothetical example that illustrated how the major theories of rebel participation lacked an explanation of individual-level participation and outlined the contributions of this dissertation to the study of rebellion and civil war. Included in the contribution section was a brief discussion on how specific conflict-related research could be improved with the inclusion of individual psychological variables.

Chapter 2 introduced a general explanation based on the theories and findings in political-participation research. This chapter began with an argument about the importance and relevance of studying individuals in conflict. In this chapter, I also provided an overview of personality and its evolutionary origins. In addition, I argued that, given *ceteris paribus*, personality-trait variation could be used to explain why some individuals choose to support a rebellion by taking up arms and fighting and why others choose to support the rebellion via moral or financial support. Finally, I clearly stated that this argument did not imply that some “rebellious gene” or “rebellious trait” existed. Instead, the contention lay simply in that some personality traits are likely to predict joining a rebel group because those who possess certain traits see the actions of rebels as more appealing than those who do not.

## 6.1.2 Empirical Results

The unique research design and analysis in Chapter 3 addresses the relationship between aggression and volunteering to be a rebel in the Democratic Republic of Congo. In this chapter I derived a single hypothesis that stated that higher-aggressive individuals would be more likely to join the rebel group than lower-aggressive individuals. Trait aggression was explained and used to predict who joined because it influences the acceptance of and desire for violent and risky behaviors. Before testing the hypothesis, I also explained that testing personality in a population of former combatants was problematic because of the effect conflict can likely have on trait levels. Therefore, I offered a research design that used individuals who were abducted into a rebel group as a quasi-control group to compare to volunteers. Next, I explained how this design provided significant leverage in testing personality-trait variation but also presented three distinct types of potential bias. After systematically accounting for the potential biases a simply T-Test revealed that aggression levels were indeed higher in volunteers than in abductees and provided support for the hypothesis. Overall, this chapter indicated that aggression does correlate with the decision to join a rebel group and that more research on personality and rebellion is likely to produce worthwhile knowledge.

In Chapter 4, I examined how individuals who have high-trait aggression weigh cost and benefits of decisions compared to individuals with low-trait aggression. This was done using an ultimatum game experiment conducted with a sample of undergraduate students from the United States. Using the logic of the game combined with previous research on aggression, I derived two hypotheses related to differences in game outcome and cognition styles between high- and low-trait aggression individuals. Next, I outlined the experiment procedure, including an explanation of skin conductance measurement. The results from Chapter 4 indicated that high-aggressive individuals were both more likely to make and reject low offers in the ultimatum game. Furthermore, I presented evidence

that the average skin conductance level of high-trait aggressive individuals increased significantly more than their low-trait counterparts. This indicated that the thinking process between the two groups also varied. Overall, this chapter produced positive results that indicated that high-trait aggressive individuals do weigh the cost and benefits of a decision differently and that more research is warranted to fully understand how this is likely to influence the behavior of rebels and rebel groups.

In Chapter 5, I shifted focus away from rebellion and examined whether aggression and other personality traits also predicted joining a traditional all-volunteer state military, in this case the U.S. Armed Forces. Using data from the extensive longitudinal Add Health dataset, I examined three of the Big-5 personality traits – openness to experience, extraversion, and neuroticism – in addition to aggression to determine their correlation with enlisting in the military. The analysis found that aggression and extraversion were positively related to enlistment while neuroticism was negatively related. This confirmed the hypotheses presented in the chapter and agreed with previous research on the Big-5 personality traits from Jackson et al. (2012) using voluntary German military enlistment.

## **6.2 Normative Implications**

I believe that two distinct normative implications result from the discussion and analysis in this dissertation. I address each in kind here and provide a discussion as to why this argument and, indeed, all personality research, are not deterministic.

For the social scientist who studies brain mechanisms, particularly aggressive ones, both conceptual and ethical problems exist. Research that deals with the brain, evolution, and brain-behavior linkage is like all social-science research in most respects but it is also

differs in one key area. That key area is that the theories created, data collected, and contentions derived help shape our idea of people themselves, their evolution, and even the limits of their successes and failures. Consequently, the first normative implications that results from my dissertation is one of cultural determinism. All social scientists who use biology to explain behavior must be wary of unconsciously making assumptions that are not directly supported by the data. Instead, our arguments must focus on the reciprocal relationship between hypothesis and analysis. I hope the above argument and analysis does this, but, if not, let me be clear now: aggression does not – not according to any of the evidence I present in this dissertation or any other evidence that I am aware of – exist more in one society, ethnic group, or region than any other. Often arguments that contend culture or ethnicity is more aggressive than another is simply based on our flawed observations and not rigorously tested evidence.

My contention in this dissertation is not that certain groups of people or countries are inherently more aggressive than others, or inherently more war-prone than others. Instead, what I believe the above analysis begins to illustrate, although much more work is necessary before “proof” exists, is that variation across individuals, which originates in the genes, is present within all societies and can at least partially explain individual differences in participation. I do not think the evidence presented here or any evidence I or someone else will collect later is likely to show that levels of aggression vary across cultures. Or that varying social levels of aggression can predict rebellion or civil war. Instead, what the argument above illustrates is that if a rebellion erupts, caused by some external factor or factors, some individuals are more likely to participate than others – regardless of what country or culture the rebellion takes place in.

The second normative implication from my dissertation is that understanding which individuals within a society are likely to rebel before a rebellion occurs could allow for po-

tentially ill-intended leaders (democratic or authoritarian) to remove the potential rebels beforehand. Indeed, this is probably both true and a distant future possibility. By examining the personality traits that predict rebel joining and understanding more about which individuals are likely to join, research like that contained in this dissertation could aid leaders in creating a system of identification that could weed out potential dissidents before they ever commit an action of rebellion. However, examining the biological underpinnings of political behavior is just as likely to enhance the social good, which is discussed in the next section, as it is to produce harm. Scholars should not ignore or reject biological arguments that contain potential harm any more than they already reject institutional arguments that do so. For example, we know that dictators are more likely to survive in the short term, both politically and physically, if they use the military to combat political opposition, yet we still research dictators and their use of the military (Svolik, 2012). In any case, the best defense against misuse by leaders is increased knowledge about the causes and consequences of political phenomena.

### **6.2.1 Why this Argument is *Not* Deterministic**

The idea of using an internal variation, to the body, to explain an external variation without claiming a deterministic relationship is a complex one. It involves the idea of reductionism, and the relationship between biological systems and physical acts. A person's behavior can be, and should be, explained in terms of its causal antecedents. To avoid teleological reasoning, however, causes (antecedents) and effects (behavior) should be seen as distinct events. For instance, I have explained someone joining a rebel group by using the relationship between his/her personality traits and argued that these traits cause the individual to have 'predispositions' toward the behaviors likely found in rebel groups. The causal factors (personality traits) remain distinct from the effects (joining a rebel group) because 'predispositions' imply increased probability of behaviors and not

an absolute certainty of one or more behaviors occurring.

To clarify, imagine that a person is sentenced to anger-management class for starting a bar fight. If we had pretested the individual's personality traits and found high levels of aggression, we could reasonably say, given the right environment, this person would be more likely to start a bar fight. After anger-management classes, however, it is just as reasonable to say that the same person, in the exact same environment, is now less likely to start a bar fight. If, however, predispositions are deterministic then this cannot be the case. The individual did not change his level of trait aggression or the underlying predispositions to feel angry or act angrily when provoked but, rather, they have been taught tricks or skills that allow them to adjust their behavior despite their predispositions. The personality trait and predisposition are still there but the behavior changes. Personality traits give general tendencies toward behaviors because they are the manifestations of predispositions toward liking or disliking the behavior; they do not outright determine an individual's behavior.

Finally, I want to discuss what this dissertation says about the likelihood of preventing warfare. On May 16, 1985, UNESCO convened an international meeting of scientists in Seville, Spain, to "refute the notion that organized human violence is biologically determined." This meeting and the statement they produced became known as the 'Seville Statement' (Adams, 1989). The evidence from this dissertation and from other research suggests that some of us may indeed have a 'violent brain' and that the scientists in Seville simply got it wrong. Violence, aggression, and risk-taking do seem to have a strong biological component, but that does not mean that war, rebellion or violence is unpreventable. Instead, understanding that part of the war effort is biologically driven could help us create better-designed institutions for the "hard-to-discern progress of peace" (Jones, 2008, 515). In fact violence, and particularly war, are rare events which

is what, at least partially, makes them difficult to study. Preventing or lessening the occurrence of war through a better understanding of a predisposition towards violence, therefore, only requires that those predispositions be present in a small number of individuals. In the next section, I explain the implications of this dissertation for creating and sustaining peace.

## 6.3 Implications for Policy Makers

### 6.3.1 Risk of Rebellion

Chapters 3 and 4 suggest that the individuals who participate in rebellion are different than those who do not, and that the participants cognate the cost and benefits of actions differently. In addition, we already know that elite manipulation of existing social cleavages can be used to create hostility and rebellion (Cunningham, Bakke, & Lee, 2011; Cunningham, 2013). What we do not know, however, is whether the individuals who participate are particularly susceptible to this elite manipulation – and if so, why. A clearer identification and classification of the sources and expression of individual differences can help scholars and practitioners to more properly see the ways elites manipulate the populace. Furthermore, it can allow for the early identification of what elite-manipulation strategies are likely to produce rebellion, because they activate those who are likely to rebel, and which strategies are likely to not. If, as is shown in Chapter 3, aggressive individuals are more likely to participate in conflict then perhaps they are also more easily manipulated by the arguments of elites.

The process of transition from protest to rebellion to civil war is well studied, but exactly who selects into each phase of the process is not. It is entirely possible, for instance, that elite manipulation that activates the more aggressive individuals within a society has a

higher probability of producing conflict. In the days leading up to the Rwandan genocide, for example, we know that elites transmitted numerous stories blaming the Tutsi ethnic group for shooting down the plane carrying Presidents Juvenal Habyarimana and Cyprien Ntaryamira. If the tone and language of those transmissions activated the aggressive individuals within the Hutu ethnic group more than the non-aggressive individuals, then the conflict might have been foreseen with more knowledge about the relationship between ethnic manipulation and those who participate in conflict.

### 6.3.2 Targeted Reintegration Programs

While the study of rebellion and civil war has been ongoing for decades, comparatively little research has addressed the process of reintegrating former combatants back into society<sup>1</sup> As a consequence, or perhaps the casualty is reversed, post-conflict reintegration programs for ex-combatants are designed and implemented in a largely ad hoc manner. Some combination of NGOs, IGOs, and state programs often work to transition people from a warlike environment to a peaceful one, but those on the ground realize that the efforts rarely operate with any overarching mandate or consistently proven design. Yet it is also true that reintegration success is crucial for sustaining peace. The programs and research that do exist often focuses, understandably so, on what are thought to be the most direct causes of the conflict or its most egregious outcomes.

For example, the UN demobilization process for combatants leaving the war in the Democratic Republic of the Congo (DRC) usually begins with either an individual voluntarily leaving their rebel group or with the defeat and capture of a group by the DRC army or a UN peacekeeping force. Next, individuals enter a UN camp in Uganda, Burundi,

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<sup>1</sup>For research on child soldier reintegration efforts see Barnitz (1999), Machel (1996), Cohn and Goodwin-Gill (1994), Annan et al. (2011), and Blattman & Annan (2007)

or the DRC itself. Here the ex-combatants are processed (primarily for health concerns) and identified. The combatants often stay at this original demobilization site for only a few days before being sent to larger reintegration camps with more facilities and are further away from the conflict inside Uganda or Burundi. Here, ex-combatants then enter reintegration programs that are generally focused on education efforts that instruct combatants on how to navigate daily life. Often, at this stage, the ex-combatants' families are contacted and efforts to relocate them back with their relatives are common.<sup>2</sup>

In addition, efforts are often made to emphasize the cost and benefits of remaining out of a rebel group and aid is provided to help ex-combatants begin their lives again. Chapter 4, however, shows that the personality traits found in DRC rebels, namely aggression, also correlates with a willingness to forgo benefits in order to punish opponents. Admittedly, the stakes of the game in Chapter 4 are not even close to the cost-and-benefit calculations involved in deciding whether to return to a rebel group, but they do illustrate that reintegration programs might benefit from additional information about the personality types of former combatants that would allow them to better tailor their offers, reintegration, or instruction. For example, it might be better for reintegration programs to focus on the benefits of life outside of rebel groups instead of the potential cost of returning. Or it might simply be better to offer smaller but more immediate benefits instead of the promise of larger but more distant benefits in the future.

More research is needed for a precise policy recommendation, but this dissertation does illustrate the potential utility of that research. International donors spend hundreds of millions of dollars on post-conflict aid and reintegration programs. Understanding a bit more about who that money is spent on will make it more effective and improve peace-building efforts.

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<sup>2</sup>A large portion of the DRC combatants originate from Rwanda and many have family members who remain in the country.

### 6.3.3 Preventing Conflict

Taken together, Chapters 2, 3, 4, and 5 suggest that individuals with high levels of aggression are more likely to join rebel groups and engage in violence. As suggested in Chapter 1, identifying a profile of these individuals has the potential to prove beneficial to scholars and practitioners who are interested in conflict resolution because understanding which individuals are likely to fight also brings greater insight into the overall rebellion process. Therefore, identifying those individuals who are likely to fight because of their particular personality profiles also establishes the individuals that conflict-resolution groups should choose to target.

In addition, understanding which personality profiles are present in likely fighters will also allow conflict-resolution groups the ability to more effectively tailor their programs. One good example of this type of tailor comes from a long tradition in conflict resolution, which was a recent topic in Maoz (2011). This tradition is called the “contact hypothesis” and was originally put forth by Allport (1954). This tradition argues that placing individuals who are in conflict in “structured encounters” so they can interact without the possibility of violence is an efficient way to lower levels of intergroup hostility because it humanizes each group in the minds of the other. In addition to being a topic for academic study, this type of conflict resolution is commonly used in areas of ongoing or potential conflict. For instance, in Israel, many individual-level conflict-resolution programs, roughly 60%, utilize some form of “structured encounter” between Arab and Jewish individuals as a way of creating better interactions between the two groups. These programs often involve young people who are likely to be the next wave of potential combatants (Maoz, 2004).

As I argue in Chapter 4, however, not all people react to an environment in the same way. In fact, previous research on aggressive individuals shows that increased contact with

outgroups actually strengthens previously held beliefs rather than lowering them. This finding is generally attributed to higher levels of cognitive dissonance in high-aggression individuals compared with low-aggression ones (Gubler, 2011). Knowing, from the results of Chapter 3, that aggressive individuals are likely to become those involved in fighting, and understanding more about how those individuals are likely to react, would clearly suggest that preventing conflict by attempts to humanize the enemy through the contact hypothesis is not the way to lower levels of violence, but instead may increase the probability of violence because the very individuals likely to fight are the same as those who humanizing efforts negatively effect.

On the research front, the findings on the “contact hypothesis” are mixed at best. Several studies finding support of it (Schwarzwald, Amir, & Crain, 1992; Maoz, 2000*a,b*; Bargal, 2004, 2008) and several note that problems exist (Suleiman, 2004*a,b*; Maoz, 2011). These mixed results can be explained by understanding two problems that arise when conflict resolution efforts are not tailored to the individuals likely to be the ones fighting. First, those individuals involved in the encounters when they are randomly selected or asked to volunteer are unlikely to be the same individuals who volunteer to join the fighting. Therefore, in a survey of participants, it is possible to get positive results on the relationship between intergroup contact and attitudes toward peace and also find that those results do not correspond to any observations of actual conflict. Second, if the “structured encounter” is by design between actual combatants then, as previous research by Gubler (2011) suggests, the results are likely to be negative as contact between groups generally produces negative or no change in attitudes. Either way, the practice and research on the contact hypothesis is a good example of how the work in this dissertation can begin to provide better policy prescriptions and sharpen academic theories.

## 6.4 Future Directions

This dissertation has answered some questions about why some people become rebels while others do not and about their likely behaviors while being rebels, but it leaves many questions unanswered. I think of this project as the beginning of a much larger research agenda that I, and hopefully others, will pursue for years to come. In many ways, the preceding chapters are really a pilot study on personality and rebellion that raises many additional research questions and avenues of investigation. In this last section, I present two distinct future projects that build off this dissertation and further validate the study of personality and rebellion.

### 6.4.1 Personality and Protest

By identifying systematic differences in the personality and behavior of individuals who join movements, a future avenue of research will shed light onto the micro-foundations of existing research providing new insights into how rebel groups are created and how movements are perpetuated or resolved. One interesting way to accomplish this goal by examining the personality traits and behavior of participants in the Arab Spring uprising in Egypt, Libya, Tunisia, Jordan and Syria. Using an open-source, academic-access feature of the Twitter website, I have accessed both the individual-tweet text and physical location (GPS data) of participants during the political movements.

In addition to analyzing the tweet's content, I will be using each subject's GIS (or GPS) data to determine the amount of time each subject spent at locations where known protest and violent events were taking place. I can then cross-compare the personality measures for each subject to their behavior during the movement. It is expected that individuals who spent more time at protests and violent events will have systematically different per-

sonality profiles (i.e. higher negative or aggressive word usage) than those individuals who did not participate. The project is, therefore, designed to reveal personality variation in individuals who join protest and rebel movements versus non-joiners and to show a behavioral manifestation of those differences that illustrates why those differences are important to the rebellion process.

### 6.4.2 Field Work

To test my general contention that individuals with certain psychological profiles will be more likely join a rebel group and that those individuals will behave in systemically different ways, I plan to conduct interviews in the northern region of Uganda and eastern DRC. In these regions, I can utilize the same volunteer-versus-abductee design that is described in Chapter 3 to control for the effect conflict participation has on personality traits.

The interviews will be more extensive than those used in Chapter 3 and consist of questions on conflict experiences, abduction experiences, return experiences, and psychological-trait measures. In addition to aggression, I will measure threat response, risk-taking propensity, and the Big-5 personality traits (openness, extraversion, agreeability, neuroticism, and conscientiousness) to gain a more complete personality profile of rebel group participants. In addition, I will take the game design in Chapter 4, among others, and directly test for cognition differences in former rebels.

My goal for the project is to interview 300-400 total subjects. Furthermore, it is not my goal to show detailed or exhaustive information about abductees (which has already been done by Annan et al. (2011)); rather, I seek to utilize the unique sample to gain greater causal validity for my theoretical argument.<sup>3</sup> Moreover, this type of interview setting,

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<sup>3</sup>I believe that a sample size of 300 is large enough but I am seeking more information about the

while somewhat novel for conflict studies, is a good avenue to develop future research ideas. In addition, since part of each interview will be spent in an open format where subjects can talk about what they wish and because some of my questions will address each subject’s wartime and return experiences, new ideas and theories will emerge inductively from raw data which is ideal for academic research (Charmaz, 2006).

As Table 6.1 illustrates, my anticipated sample can be broken down into subsamples with conflict experience (225 total) and those with no conflict experience (75 total). This is different from the analysis presented in Chapter 3 because it contains an additional sample of subjects with no conflict experience. This additional sample is designed to give me enough subjects without conflict experience to create an in-country baseline measure for all personality-trait variables. Having this baseline will further validate the results in Chapter 3 as they will clearly establish the effect of conflict experience on personality traits.

Table 6.1: Anticipated Sample of Former Combatants: Total = 300

Conflict Experience=225		No Conflict Experience=75
Joined Voluntarily=100	Abducted=125	Baseline Controls=75

In addition, and after examining the data from Annan et al. (2011) and the interviews from Blattman & Annan (2010), I anticipate there will be another subgroup division within those subjects who were abducted; abductees who escaped. As Table 6.2 and previous work in the area illustrate, a large portion of individuals who were abducted eventually escaped. Among these individuals a small, but significant, portion report voluntarily returning to their rebel group. Although small, I believe this subgroup has the potential distribution of joining behavior among the population so that I can conduct a power analysis to ensure I interview enough subjects.

to be quite informative as it will allow me to further test my argument among a very similar group of individuals who, again, made a different choice to participate in the conflict. The numbers in Table 6.2 are estimates based on percentage of subjects who escaped abduction reported in Annan et al. (2011) and those that reported voluntarily returning. If the distribution in Table 6.2 is obtainable, then I will be able to make a very powerful comparison between the subjects who escaped but returned to the rebel groups with those who escaped but didn't return, alongside the larger comparison of subjects who joined voluntarily and those who were abducted. This extraordinary sample allows me a unique mechanism to further control for abduction experience when comparing the personality-trait measures, much in the same way that the larger sample controls for combat experience.

Table 6.2: Sample of Abducted Combatants who Escaped

Escaped Abducted Subject= 75

Voluntarily Returned= 20	Didn't Return= 55
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## 6.5 Final Thoughts

The future projects described in the previous section are meant to build on the results found within this dissertation and to extend and sharpen those findings. Indeed, there is a lot left to understand about the role of personality in conflict and much future work is needed. This dissertation is concluding, but it is also designed to setup for the much larger project described in the previous section. The findings, particularly those in Chapters 3 and 4, will be used to justify grant applications and a book proposal for additional research.

I do, however, think the results of Chapters 3, 4 and 5, particularly those in 3 and 4, stand for themselves. Personality is an important part of why and how humans make decisions and it is understudied in conflict research. Psychologists, biologists, and our political-behavior colleagues have long noted that psychological differences matter for understanding individual and group behavior, but conflict studies has been late to the game. This dissertation, along with other emerging research, begins to reverse that pattern. When we put on our conflict-scholar hat, it is intuitive to explain the observation of war or peace through the variation on a spreadsheet containing economic, institutional or demographic information. Yet when we take off our hat, we often intuitively explain the behavior of our relatives and friends by recognizing patterns in their thoughts, feelings, and actions. For me, at least the time has come for those same intuitions to be applied to conflict research.

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# Appendix

Logit Model used to create the matched pairs discussed in Section 3.4.3.

Age	.149
Age Join	.226
Education	-.256
N	282
Pseudo R <sup>2</sup>	0.13

Note: None Significant at the 10% Level

## Appetitive Aggression Scale from Chapter 3

1. Do you like to listen to other people telling you stories of how they killed others?

*Explanation: You find it fascinating and exciting to listen to other people telling you stories of how they attacked or killed others – positive arousal.*

- 0 = Not at all.
- 1 = Listens to stories of other combatants with interest but doesn't try to maintain the conversation.
- 2 = Enjoys to listen to other combatant's stories but doesn't necessarily show interest in violent details.
- 3 = Tries to turn conversations to the time in combat, especially to the committed atrocities.
- 4 = Actively encourages others to tell stories of their committed atrocities, insisting that they embellish details of violence cues when they harmed a victim.

2. Does the challenge of defeating a strong opponent make the fight more pleasurable for you in comparison to the defeat of a weak opponent?

*Explanation: Emphasize the challenge.*

- 0 = Not at all.
- 1 = Feels more pleasure after a fight when he fought a stronger opponent but doesn't actively seek out these situations.
- 2 = Feels excitement in expectations of combat situations where it will be difficult to hunt down an opponent in a challenging fight.
- 3 = Volunteers for dangerous missions with uncertain challenges.

- 4 = Actively seeks out only those combat situations in which the opponent is obviously stronger/heavier armed/in the majority.

3. Is it exciting for you if you make an opponent really suffer?

*Explanation: You feel great or you feel a kick, if you make an opponent really suffer or if you torture an opponent. Suffer = bleeding, screaming, begging for their life, etc.*

- 0 = Not at all.
- 1 = Tries to distress the opponent for enjoyment but surceases them when he/she sees her/him begging for his/her life or suffers.
- 2 = Tries to distress the opponent for enjoyment and accepts to cause serious harm to him/her.
- 3 = Enjoys torturing opponents.
- 4 = Can't leave any opponent during combat without making him/her really suffer and spends extra time on these acts/trying to delay his/her death as long as possible for seeing him/her suffer.

4. Do you feel powerful when you go to a fight?

*Explanation: Anticipation of winning.*

- 0 = Not at all.
- 1 = Feels a slight increase in the confidence of victory immediately before a fight that was not present beforehand.
- 2 = Feels more powerful and confident to be a strong combatant than a realistic appraisal would justify.
- 3 = Usually expects to hunt down the enemy even if he/she will be faced with severe challenges to defeat the enemy.

- 4 = Always expects to hunt down the enemy irrespective of the initial conditions and even if there might be no reasonable chance to win.

5. Is it fun to prepare yourself for fighting?

*Explanation: Fighting includes combat, attacking civilians, going to loot or abduct.*

- 0 = Not at all.
- 1 = Feels some slight excitement during preparation in anticipation of the combat.
- 2 = Enjoys to spend some extra time to pledge himself/herself for the fight.
- 3 = Extensively celebrates the preparation for fighting beforehand, includes dressing up, preparing weapons, imaging how to fight the enemy.
- 4 = Can hardly wait to go to fight due to utter excitement during preparation.

6. During fighting does the desire to hunt or kill take control of you?

- 0 = Not at all.
- 1 = Has a slight desire to hunt down the enemy but is mainly driven by the initial goals of the combat.
- 2 = Hunting or killing becomes the main motive during fighting even if the engagement in combat is dedicated to other motives.
- 3 = Difficult to control the urge to hunt or kill. Orders and other motives become negligible.
- 4 = Can't resist the urge to hunt down the enemy during combat and also totally forgets about orders or the initial mission.

7. Do you enjoy inciting your fellows to fight?

*Explanation: Make sure that the person did not only encourage others as part of his job (as commander, etc.). The person encouraged others for fun (beyond duty).*

- 0 = Not at all.
- 1 = Enjoys to arouse attraction for violent behavior in his/her fellows, irrespective of it will be put into action.
- 2 = Enjoys to incite other fellows that also show appetitive aggression to behave crueler than ordered.
- 3 = Tries to incite all fellows for violent behavior irrespective of their attraction to cruelty.
- 4 = Always tries hard to incite fellows to engage with him/her in serious violent acts even if they are not motivated.

8. Is defeating the opponent more fun for you, when you see them bleed?

*Explanation: Emphasize that the fun comes with the blood, not with the defeat.*

- 0 = Not at all.
- 1 = Gets slightly aroused when the opponent is not only defeated but also shows bleeding wounds.
- 2 = Usually tries to harm the opponent in a way that it is bleeding for the experience of excitement.
- 3 = Prefers weapons that cause seriously bleeding wounds or is specifically prepared to cause bleeding wounds.
- 4 = Enjoys to closely inspect the wounds of his/her opponents.

9. Once fighting has started, do you get carried away by the violence?

*Explanation: Once you have started, it is difficult to stop?*

- 0 = Not at all.
- 1 = Experiences bloodlust but doesn't put it into action.

- 2 = Experiences bloodlust and sometimes has difficulties to stop harming an opponent.
- 3 = Gets into bloodlust. Difficult to stop harming an opponent, hardly manageable on his/her own.
- 4 = Gets into utter bloodlust. Fellows have to make big efforts to make them desist from an opponent.

10. Did you harm others, just because you wanted to, without having a reason / order?

- 0 = Not at all.
- 1 = Wants to harm others but doesn't have the heart to do so.
- 2 = Slightly overdoes orders when he/she wants to harm another person.
- 3 = Harms others beyond duty as long as these acts are to some extent consistent with the missions goals.
- 4 = Follows a strong desire to harm others for fun in most of the cases irrespective of any instructions/orders.

11. Once you got used to being cruel, did you want to be crueler and crueler?

- 0 = Not at all.
- 1 = Reports no general increase in the extent of cruelty, but has experienced times where he/she felt a drive to act out crueler methods.
- 2 = Reports a trend for the increase of cruelty but doesn't necessarily have to be crueler every time.
- 3 = Reports a remarkable increase in cruel behavior to achieve the same stimulation. Spends time to preconceive humiliating acts.
- 4 = Reports no saturation for the urge to behave cruel even if performing utmost cruel acts.

12. Do you know what it is like to feel the hunger/thirst to fight?

*Explanation: Urge/craving in your body; Do you know what it is like to feel the need to fight? You feel this urge in your heart or soul? When you cannot fight for a week, do you feel that you have to go and fight?*

- 0 = Not at all.
- 1 = Has at least a few times experienced an impulse to go to fight.
- 2 = Has a permanent subliminal desire to fight that, however, doesn't affect daily life.
- 3 = Has a permanent desire to fight that occasionally leads to restlessness and the drive to act out cruel behavior.
- 4 = Experiences strong craving and symptoms like restlessness, fidgeting or squirming when he/she hasn't performed cruel acts for a while.

13. Is fighting the only thing you want to do in life?

*Explanation: Neglect of other activities in favor of fighting.*

- 0 = Not at all.
- 1 = Has experienced days where he/she made the experience that fighting might be preferable to all other activities.
- 2 = The experience that fighting is preferable to all other activities is present the whole day but doesn't interfere with the interest in other activities.
- 3 = Distinctive urge to fight. Neglects other activities or interests.
- 4 = The urge to fight affects the whole day. Complete loss of interest in other activities.

14. Can attacking humans be sexually arousing for you?

- 0 = Not at all.

- 1 = Slight sexual-like arousal, not clearly identifiable as sexual.
- 2 = Experiences sexual arousal but no bodily reactions during harming a victim or imagination of how to humiliate a victim.
- 3 = Experiences sexual arousal with beginning but manageable bodily reactions during harming a victim or imagination of how to humiliate a victim.
- 4 = Bodily reactions like erection during harming a victim or imagination of how to humiliate a victim.

15. When you fight, do you stop caring about whether you could be killed?

- 0 = Not at all.
- 1 = Engages in combat actions without caring about the risk of minor health consequences but is aware that he/she could be at least seriously injured.
- 2 = Engages in combat actions without caring about the risk of serious health consequences but is aware that he/she could be killed.
- 3 = Engages in most combat actions without caring about any consequences for the life.
- 4 = Engages in all combat actions without caring about any consequences for the life.

## Proactive-Reactive Aggression Scale from Chapter 4.

The Reactive-Proactive Questionnaire (RPQ). Proactive aggression items (2, 4, 6, 9, 10, 12, 15, 17, 18, 20, 21, 23) and reactive items (1, 3, 5, 7, 8, 11, 13, 14, 16, 19, 22) are summated to form proactive and reactive scales. Proactive and reactive scale scores are summated to obtain total aggression scores.

**Instructions to Respondent** There are times when most of us feel angry, or have done things we should not have done. Rate each of the items below by putting a circle around 0 (never), 1 (sometimes), or 2 (often). Do not spend a lot of time thinking about the items – just give your first response. Make sure you answer all the items (see below).

1. Yelled at others when they have annoyed you
2. Had fights with others to show who was on top
3. Reacted angrily when provoked by others
4. Taken things from other students
5. Gotten angry when frustrated
6. Vandalized something for fun
7. Had temper tantrums
8. Damaged things because you felt mad
9. Had a gang fight to be cool
10. Hurt others to win a game
11. Become angry or mad when you don't get your way

12. Used physical force to get others to do what you want
13. Gotten angry or mad when you lost a game
14. Gotten angry when others threatened you
15. Used force to obtain money or things from others
16. Felt better after hitting or yelling at someone
17. Threatened and bullied someone
18. Made obscene phone calls for fun
19. Hit others to defend yourself
20. Gotten others to gang up on someone else
21. Carried a weapon to use in a fight
22. Gotten angry or mad or hit others when teased
23. Yelled at others so they would do things for you

## Add Health Items Used to Create Personality Measures

- Neuroticism
  - You have a lot of good qualities
  - You have a lot to be proud of
  - You like yourself just the way you are
  - You feel like you are doing everything just about right
  - You feel socially accepted
  - You feel wanted and loved
  
- Extraversion
  - I feel close to people at school
  - I feel like I am a part of this school
  - I feel socially accepted
  
- Conscientiousness
  - When you have a problem to solve, one of the first things you do is get as many facts about the problem as possible
  - When you are attempting to find a solution to a problem, you usually try to think of as many different ways to approach the problem as possible
  - When making decisions, you generally use a systematic method for judging and comparing alternatives
  - After carrying out a solution to a problem, you usually try to analyze what went right and what went wrong

## Add Health Items Used to Create Aggression Measure

Responses ranged from 0 (never) to 3 (five or more times).

- got into a serious physical fight
- item hurt someone badly
- used (or threatened to use) a weapon
- took part in a gang fight.