

Intrinsic Social Incentives in State and Non-State Armed Groups

MICHAEL J. GILLIGAN *New York University, United States*

PRABIN KHADKA *University of Essex, United Kingdom*

CYRUS SAMII *New York University, United States*

How do non-state armed groups (NSAGs) survive and even thrive in situations where state armed groups (SAGs) collapse, despite the former's often greater material adversity? We argue that, optimizing under their different constraints, SAGs invest more in technical military training and NSAGs invest more in enhancing soldiers' intrinsic payoffs from serving their group. Therefore, willingness to contribute to the group should be more positively correlated with years of service in NSAGs than in SAGs. We confirm this hypothesis with lab-in-the-field and qualitative evidence from SAG and NSAG soldiers in Nepal, Ivory Coast, and Kurdistan. Each field study addresses specific inferential weaknesses in the others. Assembled together, these cases reduce concerns about external validity or replicability. Our findings reveal how the basis of NSAG cohesion differs from that of SAGs, with implications for strategies to counter NSAG mobilization.

INTRODUCTION

The Maoist movement taught me that before I can change society I must first change myself. Mid-level Maoist commander, author interview, January 2017

The rapid collapse of Afghan National Security Forces (ANSF) and triumph of the Taliban after the US withdrawal in August 2021 shocked the world. Commentators are concerned that the Somali National Army, in its conflict with Al Shabab, will meet a fate similar to the ANSF if the African Union mission withdraws (Williams 2019). When the US-led coalition invaded Iraq in the spring of 2003, many Iraqi soldiers simply stayed home (Chandrasekaran 2006). A few months later, the Iraqi cleric Muqtadr al Sadr established the Mahdi Army, which, a year later, spearheaded the first major offensive against the occupying force. Whereas the Iraqi army evaporated in the face of the US threat, the Mahdi Army fought on (CISAC Stanford University 2019; Fallows 2005). Why do state armed groups (SAGs) sometimes collapse in response to shocks whereas non-state armed groups (NSAGs) thrive?

We argue the willingness to sacrifice exhibited by soldiers in the Taliban, the Mahdi army, and Al Shabab does not occur by itself. It must be purposefully developed by a deliberate program of what we call *inculcation*: changing soldiers' preferences so that they intrinsically derive greater net utility from serving the group. We call deriving greater intrinsic utility from serving the group

pro-group preferences.¹ We call serving the group *pro-group behavior* or, when referencing the group as a whole, *cohesion*. Our “inculcation” is similar to Checkel's (2017) “Type 2 socialization” and Hoover Green's “political education,” which she defines as “formal instruction that explains specific social or political purposes of a particular conflict, and connects conflict purposes to specific behavioral norms” (Hoover Green 2016, 624). Inculcation takes time and resources and thus comes at the expense of technical military training and tactics. Thus, in our model SAGs are acting rationally when they build less cohesion than NSAGs do. They are responding to opportunity costs: when legal means to use long-term material incentives that induce cohesion extrinsically are available, SAGs can concentrate precious time on developing their technical capacity. Notably, it was through superior military capacity that Iraqi national forces sustained the regime and suppressed Kurdish (BBC 2014; Harris 1977) and Shi'ite (Jabar 2003) separatist movements until the external shock of the US-led invasion.

Our argument proceeds in several steps. First, for reasons we detail below, NSAGs' promises of rewards, if they win the war, are less credible than those of SAGs. Therefore, NSAGs must offer greater immediate selective incentives, what Lidow (2016) calls *spot payments*, to make up for their credibility gap. One type of immediate selective incentive that groups can use are intrinsic social benefits: pride for a job well done and guilt for shirking. However these social preferences must be developed in soldiers through inculcation. Inculcation is costly in terms of time and training resources. NSAGs, needing more immediate (social and material) rewards to compensate for their lower credibility, find that

Michael J. Gilligan , Professor, Department of Politics, New York University, United States, mg5@nyu.edu.

Prabin Khadka , Assistant Professor, Department of Government, University of Essex, United Kingdom, prabin.khadka@essex.ac.uk.

Cyrus Samii, Associate Professor, Department of Politics, New York University, United States, cds2083@nyu.edu.

Received: October 03, 2020; revised: March 31, 2021; accepted: February 08, 2022. First published online: April 20, 2022.

¹ The Oxford Dictionary defines inculcation, as “instill (an attitude, idea, or habit) by persistent instruction” (<https://www.lexico.com/en/definition/inculcate>). It is one of several words we could have chosen, including indoctrination, socialization, and discipline, which we do not use to avoid conceptual debates surrounding those terms.

investing more in inculcation is more worthwhile than SAGs do. As a result NSAG soldiers will be more inculcated than SAGs soldiers *ceteris paribus*. Our theory explains the difference in cohesion between SAGs and NSAGs as a result of the optimizing behavior of the two kinds of groups given their different credibilities.²

We use our argument to hypothesize not just that NSAG soldiers are more cohesive than SAG soldiers but that soldiers' pro-group preferences increase more over time in NSAGs than in SAGs. We test our argument with new data from lab-in-the field activities with over 500 ex-combatants in four armed forces in three countries, Nepal, Ivory Coast, and Iraqi Kurdistan. NSAG soldiers who served longer contributed more to their fellow soldiers in two social-dilemma games. SAG soldiers exhibited no such correlation.

Taken together, our three cases address other possible explanations and threats to the validity of our findings. Because of our multicase research design, greater contributions by longer-serving NSAG soldiers cannot be accounted for by more prosocial people self-selecting into the movement earlier or less prosocial soldiers defecting earlier (Berman 2009), nor can it be explained by greater feelings of guilt among NSAG members, many of whom are considered heroes in their communities (Bauer, Fiala, and Lively 2018). Our findings are also not plausibly an artifact of the clandestine nature of the groups we study (Shapiro 2013), the groups' need to raise funds from the public (Weinstein 2006), or their ideologies (Gutierrez Sanin and Wood 2014; Hoover Green 2016), which differ widely across our three cases. Our evidence indicates that even NSAGs that can compensate fighters with immediate *material* selective incentives, like the Ivorian militia we study, inculcate their troops more than equivalent SAGs do. Our analysis of three diverse contexts also addresses concerns about external validity and replicability due to low-powered tests (Gelman and Carlin 2014).

Many studies have offered explanations for how NSAGs motivate their members, material selective incentives, like loot or security, being perhaps the most familiar (Collier 2000; Kalyvas and Kocher 2007; Le Billon 2001; Lichbach 1994; 1998; Ross 2004). Others have argued that groups can piggyback on the enforcement mechanisms of religious and ethnic social structures (Berman 2009; Berman and Laitin 2008; Costa and Kahn 2008). Tamm (2019) and Sawyer, Cunningham, and Reed (2017) study the role of foreign support. Gates (2002) and Haer, Banholzer, and Ertl (2011) point to force and coercion, in Gates's case interacted with geography and ethnicity. A variety of scholars have examined the effect of battlefield outcomes (Christia 2012; Lehmann and Zhukov 2019; Lyall 2016; Woldemariam 2016). These are important contributions, but none of them address our puzzle because none attempt to explain the differences between SAGs and NSAGs. They

discuss NSAGs and cannot explain the differences in lab behavior between them and SAG members that we observe. None of them explain the individual-level over-time increase in pro-group behavior by soldiers in NSAGs (but not SAGs) predicted by our model and observed in our laboratories. Furthermore, if they do mention social motivations, they do not draw a sharp distinction between intrinsic or extrinsic incentives, and none of them use lab-in-the-field techniques or attempt to measure intrinsic motivations.

Scholars have recognized for some time that all armies "socialize" their soldiers to overcome collective-action and principal-agent problems (Bartov 1989; Davison and Zasloff 1966; Shils and Janowitz 1948). Recently, armed-group socialization has enjoyed a resurgence of interest (Bateson 2017; Cantin 2021; Checkel 2017; Cohen 2017; Fujii 2017; Gates 2017; Haer and Banholzer 2015; Hoover Green 2017; 2018; Manekin 2017; 2020). Most of these articles do not attempt to explain the difference in cohesion between SAGs and NSAGs or why NSAGs socialize more than SAGs. Rather, their purpose is to describe group socialization, often examining single cases. When they do make comparisons, they use differences in socialization as an independent variable to explain other group behavior, notably civilian abuse (Hoover Green 2017; 2018). Gates (2017) could be interpreted to imply that groups that abduct soldiers will engage in more socialization, but he does not compare SAGs and NSAGs. By contrast, we explain, within a rationalist framework, why NSAGs socialize more than SAGs *ceteris paribus*.

The armed-group-socialization literature has been enlightening, but it suffers from a well-known methodological shortcoming: To quote Checkel (2017), "Arguments about socialization often face a skeptical how-do-you-really-know reaction" and "how would I recognize socialization if it were to walk through the door?" (598). This problem is acute with arguments about Checkel's Type 2 socialization (what we call inculcation), which is socialization that alters members' preferences and causes them to internalize the armed group's norms. Internalized norms typically cannot be inferred directly from observed behavior in real-world settings because it is unclear whether a subjects' actions are due to internalized norms or some (possibly unobserved) external social or material incentive. These earlier studies have attempted to address this problem by eliminating alternative explanations and conducting process tracing (Checkel 2017), which we also do, but they have not addressed the fundamental measurement problem directly.

We adopt a measurement strategy that is better suited to testing hypotheses about internalized norms by observing subjects acting anonymously in a controlled setting that removes external pressures to act in a particular way. As Hoffman, McCabe, and Smith (1998, 350) write, "A one-shot game in a laboratory is part of a life-long sequence, not an isolated experience that calls for behavior that deviates sharply from one's reciprocity norm. Thus, we should expect

² See the model in the supplementary materials.

subjects to rely upon reciprocity norms in experimental settings.” For this reason, lab-in-the-field activities are a useful tool for measuring internalized norms. Our laboratory activities allowed us to isolate the trade-off between the subjects’ preferences for external rewards (provided solely by the laboratory game payoffs) and their desire to comply with the norms of appropriateness and a preference for “doing the right thing” that had developed over time outside the lab.

This methodological innovation over previous studies in the literature on armed-group socialization along with our theory that explains the differences in inculcation across groups with a model of the trade-off between inculcation and technical training are our contributions. Although other studies have shown that NSAGs inculcate more than SAGs (Hoover Green 2017; 2018), we provide a theory that explains that difference as the optimizing behavior of the two types of groups and we offer a method for measuring the results of that inculcation with lab-in-the-field activities that remove extrinsic confounders.

INCULCATION

Extrinsic incentives to motivate troops require monitoring to deter shirking. Because monitoring is sometimes impossible, military organizations use inculcation to create intrinsic social rewards, which are effective even if soldiers’ actions are unobserved. The distinction between guilt and shame is useful. Both are social punishments, but the former is felt intrinsically regardless of whether the bad behavior is observed. The latter requires observation by society to be felt by the violator. As Kandel and Lazear (1992, 807) write,

Guilt in the form of loyalty to ... comrades provides incentives that operate even in the absence of observability. Thus the military spends much time and money creating loyalty and team spirit. The up-front investment has a large payoff because shame, which may be cheaper to create, cannot be used when actions are unobservable.

Benefits that are similar to the costs of guilt and shame might be called *pride* and *honor*. Honor is bestowed by society, whereas pride is the positive feeling for a job well done regardless of whether it is recognized. Other examples of intrinsic rewards are Andreoni’s (1990) “warm-glow” utility and Wood’s (2003) “pleasures of agency.” None of this is to claim that extrinsic incentives are never used. Rewards (like promotions) and punishments (extra duties) are common in military organizations. The point is that monitoring is difficult, particularly in the heat of battle, which makes these performance-base rewards less effective. Therefore, armed groups inculcate their soldiers so that they feel guilt for shirking and pride for valor even when their behavior is unobserved.

Shils and Janowitz (1948) have described how strong social bonds can be automatically created among small units, “primary groups,” of soldiers who strive and take great risks together. That is not what we mean by inculcation. We are talking about deliberate costly training that groups undertake to increase social bonds between soldiers over and above what would occur automatically as part of their service. A good example of what we mean by inculcation is what Hoover Green calls “political education,” which required devising and implementing a curriculum by specialists in ideological training, printing and distribution of materials to the soldiers, and time dedicated to training soldiers in this material, time that could have been spent training and developing other war-fighting capabilities (Hoover Green 2018, chaps. 3 and 4). Second we assume inculcation is *cumulative over time*—that is, the more inculcation a person is subjected to the higher the intrinsic utility they will receive from pro-group behavior. Hoover Green (2018, 44–5) made this same assumption and offers an argument for its appropriateness. Ultimately whether this assumption is plausible is an empirical question. If it is not, then our hypothesis would be rejected by the data, which, as we will show, it is not.

Finally, the important point about inculcation is that it increases *intrinsic* social incentives for soldiers to contribute to the group and refrain from shirking. In other words it changes soldiers’ preferences so that they receive a higher “warm glow” payoff from contributing to the group. There are two important features of intrinsic social incentives for our analysis. First, only intrinsic incentives can explain the subjects’ behavior in the laboratory. Subjects acted anonymously in these activities. Thus any social incentives at work among our subjects must have operated intrinsically because extrinsic incentives cannot be applied without observation of their actions. Second intrinsic social incentives are felt *immediately*. They are a kind of intrinsic social spot payment, to use Lidow’s (2016) term. As such, they overcome shortcomings in credibility that NSAGs may experience more acutely than SAGs, a topic to which we now turn.

NSAGs CREDIBILITY PROBLEMS

There are undoubtedly several differences between SAGs and NSAGs. We focus on NSAGs’ difficulty in making credible promises about future rewards, something SAGs can do more easily. Our argument centers on differences in what soldiers in the two types of groups can expect if their group wins the war. After a civil conflict, a victorious state will continue to need armed forces. Systems of reenlistment, promotions, and pensions can be more or less expected to continue. The future is less certain for members of victorious NSAGs. NSAG leaders will undoubtedly have made many promises to their soldiers about the rewards they will receive if they win the war, but whether the leader is able to keep those

promises will depend on factors that are unknown until after the war is won.³

Well-known examples of revolutionary leaders betraying their cadres after the war provide a *prima facie* empirical case for this argument. Trotsky (1936) famously decried the betrayal of the Russian Revolution. To use Mallet du Pan's well-known adage, "revolution eats its children" rather frequently. This was no different in twenty-first-century Nepal than in post-revolutionary France or Russia. Among the Maoist cadres in our sample, a sense of betrayal was widely shared, a point corroborated in the Nepali press (Jha 2014). Lidow (2016) notes, as we do, that NSAGs promises of postwar rewards can be untrustworthy and that this untrustworthiness can tempt soldiers to shirk. In his data (2016, 36), rebel leaders earned post-conflict rewards in 56% of cases and in only 59% of those cases did rebel commanders receive a share of those rewards. In short, NSAG leaders are less certain to keep their promises and as a matter of history they have often failed to do so. This credibility problem, faced more acutely by NSAGs than SAGs, has important theoretical, empirical, and policy implications.

If we are right, SAGs should possess methods of motivating their troops that are not available to NSAGs. As their promises of payoffs in the future are less certain, NSAGs must pay for services in the present, through lootable resources, "pleasures of agency" (Wood 2003), and other sorts of immediate selective incentives (both material and social), including the kinds of intrinsic social incentives described in the previous section. State groups, by contrast, can incentivize their soldiers with both payment in the present and more credible promises of awards, promotions, pensions, and other benefits in the future. Even in cases where NSAGs are equal with SAGs in their ability to offer immediate material selective incentives, they are unequal in their inability to make credible promises about future rewards (Lidow 2016). For this reason even NSAGs that can offer soldiers immediate material rewards (like the Gbagbo militias we discuss below) will still invest more in inculcation than equivalent SAGs according to our argument.

We think both SAGs and NSAGs must use inculcation to counteract the problems of unobservability of effort, but NSAGs must also use inculcation to provide immediate social incentives to compensate for the lower credibility of their promised future rewards. The difference, then, between SAGs and NSAGs is the *amount* of inculcation. Training time is scarce. Time spent on inculcation is time not spent on the technical aspects of warcraft. At the margin, armed group leaders must make trade-offs between these two important kinds of training. We claim that, at the margin, NSAGs will invest more resources in inculcation than SAGs to compensate for the lower credibility of their promises

of future rewards. Over time, we would expect a greater development of pro-group preferences among NSAG members than among SAG members.

TRAINING

The first step in our posited causal process is that NSAGs should engage in more inculcation than SAGs do. In this section, we discuss existing and new qualitative evidence to suggest that this is the case. Hoover Green's (2017; 2018) comparison of SAGs and NSAGs in El Salvador provides strong evidence that SAGs did not inculcate moral and political social norms into their troops to the same extent as NSAGs: "Whereas military training was—as in most state militaries—highly routinized among Salvadoran forces, no regular-army ex-combatants in my interview sample reported receiving any formal, ongoing training in topics other than military skills, routines, or obedience" (90). SAG soldiers in her sample recounted little to no social or political training. The non-state FMLN (Farabundo Marti National Liberation Front) by contrast conducted extensive education on the political and social nature of their fight. Ninety-one percent of FMLN members she interviewed reported receiving "political education," whereas only 21% of regular army and 46% of special forces SAG members did. Sixty-one percent of FMLN interviewees received books or pamphlets for political education, whereas only 12% (regular army) and 24% (special forces) of SAG members did. The lessons were more enduring for NSAG members as well: 30% of FMLN interviewees but only a little over 10% of SAG members were able to recall those written materials. (Hoover Green 2018, 90). Salvadoran SAGs' focus on technical training at the expense of inculcation appears to have been militarily successful. As Hoover Green (2018, 95) points out "Most analysts ... agree that government gains in 1984-85 ... were due largely to improvements in air power, which destroyed the FMLN's ability to operate as a conventional army."

There are other clues in the literature. Hassan (2015) discusses the centrality of inculcation in the training of Islamic State (IS) soldiers. Although not explicitly, he implies that ideological socialization is a major portion, perhaps, *the* major portion of IS recruit training. Ugariza and Craig (2012) argue that ideology was predominant in the training regimen of the FARC (the Spanish acronym of the Revolutionary Armed Forces of Colombia), stating, "There is documentary and testimonial evidence of significant resources expended by the FARC on ideological training for its members" (453). What is particularly important about their evidence is that the FARC's extensive ideological inculcation continued even after they could rely on immediate *material* incentives from narco-trafficking. The Colombian state military has no similar ideological program. Instead, their training focuses on technical military skills (Marks 2002; Naquin 2020).

As further evidence for our claim that NSAGs focus on pro-group inculcation more than SAGs do, we

³ In recent work, Sonin and Wright (2019) show that the Taliban has difficulty smoothing resources even across adjacent fighting seasons, highlighting their difficulties making credible intertemporal commitments.

conducted a qualitative inquiry with soldiers in each of the three countries in this study. For the NSAG members these discussions were obviously retrospective. To insure interviewees' anonymity we suppress any potentially identifying information.

According to the Maoist cadres we interviewed, Maoist leaders unceasingly inculcated Maoist social, political, and military values into their troops. Each military unit contained a political officer to train soldiers in Maoist doctrine and to assure compliance with it. Lessons in Maoist social doctrine were conducted as soldiers were awakened, at bedtime, and with each meal. Onesto (2006) describes the activities of "culture squads," Maoist units that traveled throughout a region shoring up support for the movement among the masses and the troops. We were given a performance by one of these squads after the war in January 2015. Their songs stressed the glories of martyrdom, the historical role of the Maoists in advancing the cause of the oppressed classes, and the need for Maoists to do their part to advance the cause of the masses.

In a nonanonymous interview with Chief of the Maoist People's Liberation Army (and later Nepal's Vice President) Pasang in the summer of 2012, we asked him what were the most important traits for a Maoist fighter. Interestingly, he did not mention military know-how. Instead he stressed physical fitness and ideological commitment. Without ideological commitment he said, fighters would not be willing to persevere with the cause. Other lower-level commanders similarly emphasized the importance of ideological commitment more than military skills among their cadres. All of these efforts at inculcation appear to have paid off in terms of the effort put forward by the Maoists' troops. For example Cowan (2013, 305, 330) rates Maoist cohesion and morale as extraordinary.

The Royal Nepalese Army (RNA), by comparison, was much less concerned about soldiers' social commitment. Band-of-brothers appeals were not uncommon of course, but the RNA was much more concerned that its soldiers possessed the technical wherewithal to operate in the field than the Maoists were. As in most professional military organizations, soldiers were generally known not only by their ranks but also by their specialization: engineers, riflemen, machine-gunners, airborne troopers, and so on, so their technical military skills became part of their identity. RNA leaders believed counterinsurgency warfare requires special skill sets, so the RNA's operations against the Maoists were mostly conducted by a handful of special units directly trained and equipped by the US Army Rangers. Motivation by the RNA for officers focused on career considerations and for lower-ranked soldiers on job and economic security. Furthermore, even during the height of the insurgency, RNA training focused on the technical needs of the RNA's peacekeeping mission.⁴ A current officer in the postwar Nepalese

Army (NA) who had integrated in the Army from the Maoist People's Liberation Army (PLA) explained that Maoist inculcation was completely different from NA inculcation. The former was about the social good of the cause, whereas the latter was only about the glory of NA. As mentioned above it was also more frequent than NA inculcation.

For the Gbagbo-militia members we interviewed in Ivory Coast, participating in the war was much more than a source of income. They described their participation as a "patriotic act," highlighting the ideological training that they had received. Inculcation was a large part of their training and, indeed, was more common than military training. Militia members we interviewed reported that they received ideological training quite frequently, in most cases daily, but their military training was only sporadic. For example, one commander reported that they received military training only once or twice a week, but they received ideological training twice per day. Other militiamen reported that they received a few weeks of basic training at the beginning of their service but then afterward received none. Meanwhile the ideological training continued on a daily basis.

The influence of this ideological training is clear in that all of the militiamen we interviewed could remember fine details of that training a decade later, including words to special patriotic and anti-Burkinabe songs that were used to inculcate them. We presented the interviewees with two hypothetical soldiers one who had been in the movement for a year and one who had been in for only a month. We asked who would be more committed to the movement and why. Commanders we interviewed all said that in their estimation longer-serving members were more committed to the movement. When we asked why, one commander put it this way: "It is like with an education. A student who attends school for a year is going to know more than a student who attends for a month."

In her memoir of her days as a Peshmerga fighter in Iran, Dianna Nammi does not mention any military training she received but does describe a great deal of ideological training (Nammi and Atwood 2020). Indeed, she served as an ideological trainer for most of her service. She recounts the tale of a young Peshmerga recruit who was so poorly trained with her rifle that she was killed in battle while repeatedly running to Nammi to get it unjammed. What is striking about this anecdote is that not only were the Peshmerga not as technically trained as the Iranian army soldiers they fought; they were not even fully trained on the rudimentary weapons they did possess.

In our own interviews with Peshmerga fighters, one soldier recalled, "We had two to three sessions a month where we were updated about the developments in the city, ideas of our party and the Kurdish liberation movement, and developments in the wider region." A different former fighter explained the rationale behind the greater emphasis on inculcation: "Revolution is about an intellectual process. Without intellectual education you cannot sustain your movement, especially with youths... . You need to develop values. Without

⁴ These statements are based on the observations of one of the authors of this paper who served as an officer in the RNA during the Maoist insurgency. See also Mehta and Lawoti (2010).

this you cannot sustain in the mountains.” As another fighter put it, “for us, the ideas, words and ideology were as important as the armed struggle. Because we also wanted to free people.” As in the other cases we have discussed this ideological training has stuck with them. The following response was emblematic: “I do remember them very well, like it was last week. Especially, we were given lessons about how to behave with the people, ethical behaviors, how to treat the villagers, how to sit and talk when we were in a house and only women were there. So it was not all about politics and ideology, but also personal ethical behavior.”

As stated in the introduction, SAGs inculcate less not because their leaders are ill-informed or irrational but because they are sensitive to opportunity costs. With legal and material means to motivate recruits, SAGs have the opportunity to develop technical capacity and make the most of access to more advanced weaponry and other material inputs. The descriptions of experiences by old Peshmerga stand in sharp contrast to our observations of current Peshmerga training. We visited a Peshmerga training facility during our field work in the summer of 2016. By this time, the Peshmerga had transformed into a relatively well-resourced SAG defending the autonomous Kurdish region. We observed no instances of ideological inculcation at all, although some probably occurred. Instead we observed training and facilities that resembled training camps in the United States. Soldiers were taught specific skills, often by NATO trainers: military police, medics, and explosive ordnance disposal specialists. The character and culture of the facility was one of far-reaching professionalism. As described above with respect to the RNA, soldiers self-identified with their areas of technical military specialization.

This qualitative summary provides *prima facie* validation for the first step of our argument, that NSAGs focus relatively more than SAGs on inculcation and less on technical military training. We now turn to our main evidence, soldiers’ behavior in the lab.

EMPIRICAL MODEL

We have just provided some qualitative evidence to suggest that NSAGs spend relatively more time and resources on social inculcation than SAGs. The question remains whether this extra inculcation actually elicits relatively greater contributions from NSAG soldiers. In this section we will present the empirical model that we use to answer that question. To be as clear as we can about the process that we think is at work in our data, we describe our hypothesized data-generating process in somewhat formal terms in the supplementary materials. Here we will only summarize.

We claim that NSAG’s promises to their soldiers will typically be less credible than those of SAGs. High-credibility leaders elicit greater contributions from soldiers than low-credibility leaders, all else equal, because soldiers’ marginal expected payoff, if the group wins, is higher due to the leader’s higher probability of

keeping their promises. The leader chooses the training regimen that maximizes the group’s probability of winning the war. Because that probability is concave in the soldier’s contribution and high-credibility leaders already elicit larger contributions than low-credibility leaders, investing in inculcation produces a smaller increase in the probability of winning for high-credibility leaders. For these reasons, there are cases where SAG leaders will choose technical training but NSAG leaders will not, but there are no cases where a NSAG leaders will choose technical training and SAG leaders will not *ceteris paribus*. The same is true *mutatis mutandis* for inculcation.

We assume inculcation is cumulative over time, the same assumption Hoover Green (2018) makes. Indexing a given soldier’s first year of service with 1, the total amount of inculcation the soldier possesses in their T th year of service is $sT = \sum_{t=1}^T t_t$ where $t_t > 0$ in periods when the group inculcates and zero otherwise. Define T_i as the total amount of time served by soldier i at the time of our laboratory session. We can observe immediately, then, that

Hypothesis 1 For two soldiers i and j with lengths of service $T_i < T_j$, $sT_i \leq sT_j$.

The model in the supplementary materials shows that there are cases where NSAGs will invest in inculcation and SAGs will not, but there are no cases where SAGs will invest in inculcation and NSAGs will not *ceteris paribus*, which implies

Hypothesis 2 $s_{NSAG} \geq s_{SAG}$.

The discussion in the previous section provides some qualitative evidence for Hypothesis 2.

To test these hypotheses more rigorously we use two behavioral games to measure the soldiers’ contributions to collective effort. Laboratory activities have provided great insight into the behavior of persons in various professions (Chiappori, Levitt, and Groseclose 2002; Fehr and List 2004; Levitt and List 2007; List and Mason 2009). To our knowledge this is the first time they have been used with SAG and NSAG combatants. The laboratory is a fruitful place to measure effort induced by intrinsic social rewards: subjects’ behavior is anonymous in the lab, so it is free from extrinsic social pressure. We understand that subjects bring with them into the lab heuristics and habits developed over their lifetimes and these may affect laboratory behavior. Some of these heuristics and habits may have been formed in response to prior exposure to extrinsic punishments and rewards. This is the point of our measurement strategy. We hypothesize that NSAG soldiers’ (and to a lesser extent SAG soldiers’) inculcation, which may have included extrinsic rewards and punishments at the time it was conducted, created an *intrinsically motivated* reaction to the lab activities. Therefore longer-serving members should make larger contributions in the lab where their behavior is anonymous.

Complete scripts for our behavioral activities and survey questions are available in the replication

materials (Gilligan, Khadka, and Samii 2022). We call the first activity the pay-it-forward game. Each officer i was given a monetary endowment of amount E and randomly and anonymously paired with two other soldiers j and k ($j \neq k$). Soldier i was instructed that they could send any amount from E (including zero) to j .⁵ We informed the subjects that we would double the amount they contributed and give it to j . Meanwhile we instructed i that some other soldier k would send some amount, including possibly zero, to i and we would double that amount and give it to i .

The second laboratory activity was a standard public-goods game. Each subject i was again given a monetary endowment of amount E and told they could donate any amount of E , including zero, to the group. Each subject, including i , would be awarded 20% of the total contributions regardless of whether they contributed or not. There were 12 subjects in each laboratory session, so a contribution of 10 local currency units yielded 24 for the whole group.

Both games create social dilemmas. Social optimality requires that all subjects contribute their entire endowment in both activities, but subjects' individual material incentives dictate contributing nothing. The two games appeal to different normative sensibilities. In the public-goods game free-riding hurts the group as a whole, whereas in the pay-it-forward game free-riding hurts a single individual. In the public-goods game free-riding hurts individual people less but it hurts a larger set of people. Shirking in the pay-it-forward game hurts only one person, but it hurts that person acutely. Our theory is silent on which of these social situations should invite larger contributions. We included both for completeness.

To test hypotheses 1 and 2, we use a simple model of the soldier's contribution decision. We describe the soldier's utility from contributing to the pay-it-forward game with the following equation:

$$U_i = E - c_i + 2c_k + S(sT_i, c_i), \quad (1)$$

where E is the endowment given to the soldier in the laboratory, c_i is the amount the soldier contributes to person j , c_k is the amount contributed by subject k , and $S(\cdot)$ is i 's social utility function, which is increasing in the total amount of inculcation soldier i received from the group (sT_i) and i 's contribution (c_i) and concave in c_i .

Similarly we describe the soldier's utility from contributing to the public goods game as follows:

$$U_i = E - 0.8c_i + 0.2C_{-i} + S(sT_i, c_i), \quad (2)$$

where the parameters are the same as described in Equation 1 with the addition of C_{-i} , the total amount contributed by the other subjects in the laboratory session except i .

For estimation we need to assume a functional form for $S(\cdot)$. For simplicity we assume that $S = \sigma sT_i \ln(c_i)$, where $\sigma > 0$ is the rate at which inculcation produces intrinsic utility relative to income. We discuss in section 6 why differences in σ across groups cannot explain the results below. Maximizing this utility and solving for soldier i 's equilibrium contribution yields

$$c_i = \sigma sT_i - 1 \quad (3)$$

for the pay-it-forward game and

$$c_i = 1.25\sigma sT_i - 1 \quad (4)$$

for the public-goods game. In some estimations we include potentially confounding covariates \mathbf{X}_i , which means assuming $S = \sigma sT_i \ln(c_i - \mathbf{X}_i\gamma)$, where γ is a vector of estimates of the effect of \mathbf{X}_i . The equilibrium contributions are then $c_i = \sigma sT_i - 1 + \mathbf{X}_i\gamma$ and $c_i = 1.25\sigma sT_i - 1 + \mathbf{X}_i\gamma$, respectively.

In the tests below we combine the amounts contributed in the two games so when we regress total amount contributed (across the two games) on years served we are actually estimating

$$\beta = 2.25\sigma s \quad (5)$$

for each armed group in our sample.

We can restate Hypothesis 1 in terms of the estimates that follow:

Hypothesis 1' $\beta \geq 0$,

and Hypothesis 2 as

Hypothesis 2' $\beta_{SAG} \leq \beta_{NSAG}$.

EVIDENCE FROM NEPAL

The insurgent movement of the Communist Party of Nepal–Maoist (henceforth “the Maoists”) grew out of a factionalized communist movement that operated underground prior to democratization in 1990. Dissatisfied with the pace of change following the democratic changes of the 1990s, the Maoists splintered from the other communist factions that opted to operate peacefully (Lawoti 2010, 5–7; Thapa 2004, 20–9). In early 1996, they delivered a 40-point ultimatum calling for a host of progressive reforms. Seeing no movement on these demands, they launched the “People’s War” in February 1996 with a series of raids on police stations in the middle western part of the country. Beginning with a few dozen committed guerrillas and a sparse party network in 1996, by the end of the insurgency in 2006 the Maoists were estimated to have had between 5,000 and 10,000 armed guerrillas, 10,000 to 25,000 militia, plus tens or even hundreds of thousands involved in various party and front organizations (International Crisis Group 2005; Joshi and Mason 2007, 395). The war caused approximately 13,000 deaths over 10 years from a population of

⁵ In practice, of course, contributions were a discrete, not continuous, choice because the endowments were given in specific denominations of currency.

roughly 27 million (Nepal, Bohara, and Gawande 2011; Thapa 2004). According to detailed data gathered by the Nepalese nongovernmental organization Informal Sector Service Centre (1996–2006), the vast majority of fatalities (86%) took place in the Nepalese countryside after 2001, the year in which the Maoists organized a more formidable force under the banner of the People's Liberation Army (PLA)⁶ and the Royal Nepalese Army (RNA) mobilized to fight them (prior to 2001 the regime's counterinsurgency campaign was conducted exclusively by the Armed Police Force). The war formally ended in November 2006 with the signing of the Comprehensive Peace Agreement between the Maoists and the government. The Maoist movement transformed into a legitimate political party and remains a central player in Nepalese politics.

We collected data from 17 different laboratory sessions, each with 12 PLA officers, for a total of 204 different subjects. Each subject played the games described in the previous section once. We conducted 14 sessions at 6 sites near Maoist cantonments throughout Nepal. We set up the lab in hotel meeting rooms in a town near a Maoist cantonment, invited all the officers that were available at that cantonment, and bussed them from the cantonment to the lab location at the hotel. We used all available officers in each cantonment, reducing concerns about self-selection into the laboratory activities.⁷ In three cases we implemented the sessions in Kathmandu with Maoists who were in the capital on party business. We conducted the laboratory activities from late July 2012 through March 2013. Following the lab sessions, we surveyed subjects' personal attributes and backgrounds (all pretreatment variables) to use as controls in the analysis that follows. The sample includes officers of various ranks, ethnicities, and regions of Nepal. We present summary statistics and the distribution of the subjects' ranks for the Maoist sample in the supplementary materials. The participants' endowments in Nepal were 100 rupees for each of the two activities described in the previous section. At the time of our field research, 100 rupees was worth about one US dollar. Soldiers stationed in the cantonments received about 25 US dollars per month food allowance, so the subjects' endowments across the two activities corresponded to over two days' food allowance. The dates and locations of all the sessions are listed in the supplementary materials.

Our empirical expectation is that soldiers who participated in the insurgency longer should, all else equal, be more inculcated, exhibit stronger prosocial norms,

and contribute more in the laboratory sessions. To test our hypothesis we fit the following regression model:

$$c_i = \alpha + \beta \text{Years served}_i + \mathbf{X}_i \gamma + \varepsilon_i, \quad (6)$$

where c_i is the amount they contributed and ε_i is a well-behaved error term. The primary independent variable is years served in the PLA (T_i in the notation in the previous section), and \mathbf{X}_i is a vector of control variables. From **Hypothesis 1'** we expect $\beta \geq 0$.

Figure 1 displays the bivariate relationship, and Table 1 shows the estimates, using as the dependent variable the combined amount the subject contributed in the two games, with and without covariates controlling for age, father's education level, lab session fixed effects, caste/ethnicity fixed effects, and urban/rural home village fixed effects. Even though age varies at the individual level, at the bottom of the table we report wild-cluster bootstrap p values that cluster by laboratory session for robustness. The results verify the expected positive relationship. The specification in last column indicates that, controlling for the other factors, subjects gave about six more rupees for each extra year in the Maoist insurgency. A soldier who served 10 years (roughly the average for our sample) gave on average an extra 60 rupees, nearly one-third of the entire endowment.

Selection effects due to desertion are an alternative explanation for the results in Table 1. If less prosocial soldiers deserted at higher rates, then the positive relationship shown in Table 1 could have nothing to do with inculcation by the Maoists but could simply reflect that more pro-group soldiers stayed in the movement longer, leaving a self-selected especially pro-group sample of longer-serving soldiers at war's end. To test this alternative explanation we surveyed 100 former Maoists and had them list all of the people in the first platoon in which they served. We asked them what became of each soldier they listed, prompting them with several options including desertion, killed in action, and several others. We purposefully asked them about the first platoon in which they served because we believed their memories of those people would be stronger than memories of other soldiers they served with later. Figure 2 dispels any concerns about the effects of desertion on the sample. The percentage of accumulated desertions over the course of the war is about the same in early first platoons as in later ones.⁸ Accumulated death rates were higher for early joiners, which makes sense if year-by-year death risk was steady. Our theory suggests that willingness to take risks that could lead to death would be increasing in pro-group preferences. If so, the selection effect would

⁶ The Maoists did not use the name "People's Liberation Army" for their armed wing until 2001 (International Crisis Group 2005; Mehta and Lawoti 2010), but for simplicity we apply it here to characterize all Maoist combatants that would eventually participate in the PLA even if they joined before 2001.

⁷ A few noncommissioned officers inadvertently made it into our sample. Our results are robust to their exclusion.

⁸ This means that the average yearly desertion rate for first platoons of early joiners was lower than first platoons of later joiners. One explanation for this pattern is that soldiers' yearly desertion rates declined with length of service, which is consistent with our argument. Another explanation is that early joiners were more pro-group and therefore less likely to desert than later joiners. Although plausible, that explanation cannot explain our Ivory Coast results as we discuss below.

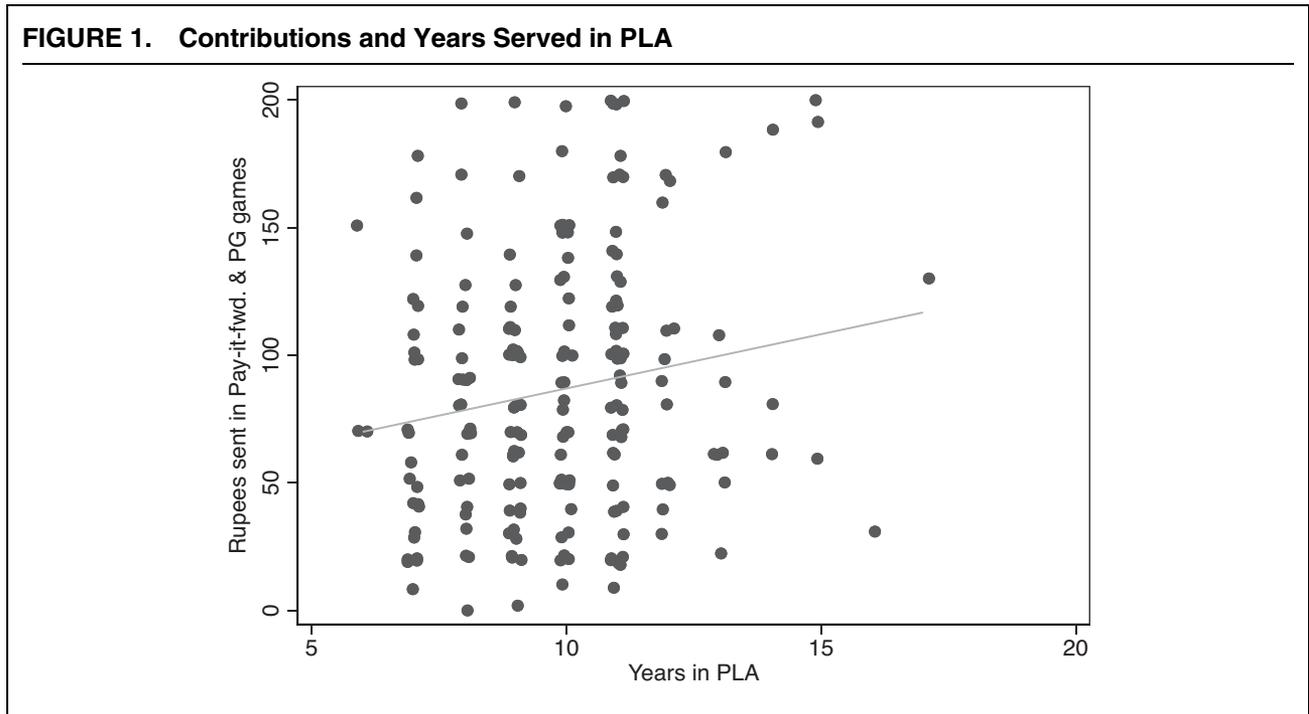


TABLE 1. Contributions and Years Served in PLA, Regression Estimates

	(1)	(2)
	No covariates	With covariates
Years in PLA	4.25** (1.93)	6.19*** (2.19)
Observations	204	203
Wild-cluster bootstrap p value	0.09	0.02

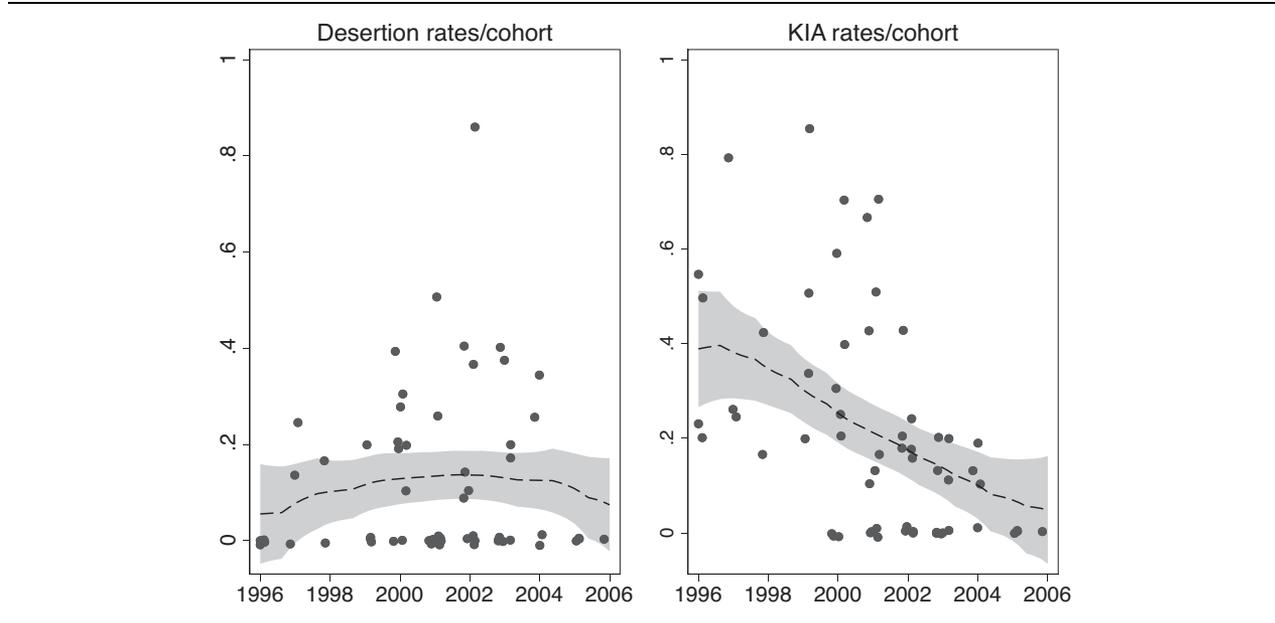
Note: Robust standard errors in parentheses. Ordinary least squares (OLS) estimates; outcome variable is combined amount sent in games, in rupees. Wild-cluster bootstrap is clustered by 17 laboratory sessions. One observation dropped because of missing data on father's education. Two-sided tests: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

work against our result by dampening the relationship between years of service and contributions.

Another possible explanation for the findings is that Maoists were contributing more to compensate for feelings of guilt they had about the war (Bauer, Fiala, and Lively 2018). We could find no evidence for this concern. At the time of our research, Maoists were far from pariahs. They were a legitimate, politically victorious party, and their leader was the Prime Minister of Nepal. Although some Maoists in our sample may have killed or tortured (we did not ask out of ethical concerns), in general the war was low intensity. Most casualties were inflicted by the RNA.

Several further threats to the validity of our findings remain. First, Maoist ideology is egalitarian. How generalizable are the results from Maoists to other NSAGs? Would, say, an ethnic-based NSAG, whose purpose was to arrogate privilege to its ethnic group, exhibit the same correlation between time of service and contributions? Second, our argument makes a

comparative claim that soldiers in NSAGs should be more inculcated than soldiers in SAGs. Unfortunately, we were unable to obtain permission to study members of the Nepalese state forces. If we had been allowed to conduct the same analysis with the Nepalese Army would we have found, as we hypothesize, that the relationship between time served and contributions was weaker than it was for the Maoists? Third, Shapiro (2013) shows that NSAGs' clandestine character varies across cases with important implications for their organizational structure. To allay any suspicions about this issue, we present results for a group that was not underground in the next section. Fourth, might the Maoists' habits of greater sociality have been caused not by inculcation but by having to coax resources from the rural population of Nepal? Weinstein (2006) argues that groups that cannot rely on lootable resources (like the Maoists) have to treat civilians more gently, knowing that they rely on civilians for material support. These more positive interactions with civilians may

FIGURE 2. Desertion and Killed-in-Action Percentages among Maoist Soldiers by Year of Joining


Note: Points are jittered in the graphs so that masses of observations are visible. For the *left graph*, a point at, say, (1996, 0) corresponds to a respondent who joined in 1996 and for whom none of their original platoonmates deserted throughout the war. Values greater than 0 mean that some share deserted at some point during the war. The *right graph* can be interpreted similarly for accumulated killed-in-action (KIA) rates. A local (first-degree) polynomial fit estimates average desertion and KIA rates for cohorts who joined at different years from 1996 to 2006. The *gray area* is a 95% confidence band on the local polynomial fit.

have fostered generally prosocial (but not necessarily pro-group) habits. Fifth, statistical power is always an issue with small sample sizes. Results may be less likely to replicate when statistical power is low (Button et al. 2013). Sixth, micro-level studies like ours always raise questions of external validity. Seventh, we have shown that length of service in the Maoist movement is positively correlated with contributions in the lab. Does that finding by itself indicate that the greater contributions of longer serving members was due to inculcation by the Maoists, or could it instead be that people with greater pro-group preferences joined the movement *earlier*? If so, the movement may have caused no change in members' sociality and we are simply observing self-selection effects. We defer a fuller discussion of these issues until after we have presented evidence from the Ivory Coast and the Peshmerga.

EVIDENCE FROM THE IVORY COAST

To address these concerns we returned to the field in the summer of 2015 to extend our analysis to combatants in the Ivory Coast's civil war. The Ivory Coast offers a compelling case to use to address the threats to validity discussed at the close of the previous section. We gathered data in the Ivory Coast to test a *specific directional hypothesis*. We use this fact to increase our statistical power, which is crucial given that data on NSAG and SAG soldiers are extremely difficult to collect. Results opposite in the hypothesized sign fail

to reject the null. Thus, one-tailed tests are substantively appropriate, increase the power of our tests, and are what we report below.

At the risk of oversimplifying, the war in Ivory Coast was an ethnically charged conflict between the largely Muslim Burkinabe people who resided in the northern part of the country and the largely Christian people who resided in the southern part of the country. The former were led by Alassane Ouattara, the latter by Laurent Gbagbo, who became Ivory Coast's president in 2001. Under the 33-year presidency of Felix Houphouët-Boigny (1960–93), these two ethnicities lived in relative peace. After his death, southern Ivorians' resentment of northern "foreigners" produced increasing political tension, discrimination, and occasional violence. War finally erupted in 2002 when Ouattara was barred from running for president because of his Burkinabe heritage. Northern elements of the National Army mutinied and along with fresh northern recruits created the Force Nouvelle to fight the southern Ivorian forces. Christian Ivorian soldiers in the national army did not mutiny and continued to fight for Gbagbo. In addition, Gbagbo raised paid militias to fight on his behalf and certain Ivorian citizens resentful of northern "foreigners" also formed militias of their own accord to fight against Force Nouvelle. A peace agreement was signed in 2008, providing for new elections in which Ouattara was allowed to run. Gbagbo whose term ended in 2005 postponed the elections several times until 2010. Gbagbo lost that election to Ouattara in late November 2010 but refused to step down, reigniting

TABLE 2. Lab Contributions and Years Served in Ivorian Army and Gbagbo Militia, Regression Estimates

	(1)	(2)
	No covariates	With covariates
Years in movement	26.50* (11.27)	23.47* (12.07)
Army (SAG) × years in movement	-26.14* (11.69)	-25.34* (12.56)
Army (SAG)	138.49 (97.73)	141.50 (100.99)
Observations	110	110
Wild-cluster bootstrap one-sided <i>p</i> value (NSAG)	0.11	0.04
Wild-cluster bootstrap one-sided <i>p</i> value (SAG–NSAG)	0.09	0.07

Note: Robust standard errors in parentheses. OLS estimates; outcome variable is combined amount sent in games, in CFA. Wild cluster bootstrap is clustered by 10 laboratory sessions, One-sided tests: * $p < 0.05$, ** $p < 0.01$.

the civil war. Gbagbo's militias committed various atrocities (Human Rights Watch 2011). In April 2011 Outtara's forces captured Abidjan, the capital city, and arrested Gbagbo, ending the war.

We studied the laboratory behavior of members of Gbagbo's militias and members of the Ivorian military who remained loyal to Gbagbo. In many ways these two groups form an ideal comparison with which to test our model. Both fought on the same side and shared an ethnic identity, but the Army was obviously a SAG and the pro-Gbagbo militias were a NSAG. For SAG members, fighting for Gbagbo was a *career*. For militia members it was a *cause*. Our theory predicts that militia members should have become more inculcated compared with members of state forces, and this difference should be reflected in the contributions in the lab. There should be a stronger positive correlation between time served and contributions among the militiamen than among the state forces.

We conducted the same two activities described above, the pay-it-forward game and the public-goods game. Each subject was given an endowment of 500 CFAs in 50 CFA coins for each activity.⁹ We conducted five sessions with members of the Ivorian military (four army and one marines) and five sessions with Gbagbo militias. All sessions were conducted in the capital, Abidjan, or one of its close suburbs. The SAG sessions were conducted on military bases; the Gbagbo sessions were conducted in primary schools on weekends in the suburb of Yopougon, a Gbagbo stronghold.

We present balance statistics between the two subsamples in the supplementary materials. Ethnic and religious characteristics are quite balanced, but some background characteristics do differ: militia participants are five years younger on average, are less likely to have originated from Abidjan, and are more likely to

have literate fathers, but their own educational levels tend to be lower (as expected given educational requirements for entry into the state forces). Therefore we include these background characteristics in specifications in Table 2 for robustness. SAG and NSAG subsamples differ in wartime experiences like years served, rank, number of combat engagements, and number of times wounded. These are posttreatment variables, so we do not use them as covariates in the specifications for Table 2. We restrict our SAG sample to those who had joined subsequent to the onset of civil war in 2002 so that the supports of years served match across the two subsamples. Ranks obtained by militia members tend to be lower (based on a coding that aligns the ranks as best as possible), but militia members were involved in more combat and tended to be wounded more often. To the extent that these latter two indicators are real-world measures of effort, they corroborate our model.

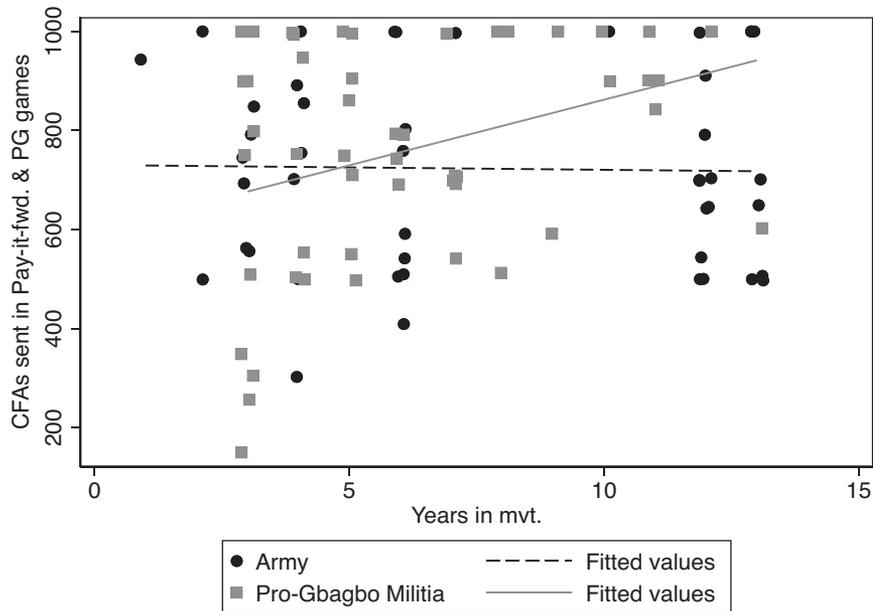
Turning to the lab data, we estimate the following equation:

$$c_i = \alpha_1 + \beta_1 \text{Years served}_i + \beta_2 \text{Years served}_i \times \text{SAG member}_i + \alpha_2 \text{SAG member}_i + \mathbf{X}_i \gamma + \varepsilon_i \quad (7)$$

The definitions are the same as those described in Equation 6 except that now we can derive separate estimates of the effect of the length of service for SAG and NSAG soldiers. The value for β_1 is the estimated average contribution by NSAG members for each year served, and $\beta_1 + \beta_2$ is the estimated average that SAG members contributed for each year served. From **Hypothesis 1'** we expect $\beta_1 > 0$, and from **Hypothesis 2'** we expect $\beta_2 < 0$.

Figure 3 shows bivariate relationships, and Table 2 displays ordinary least squares estimates of the coefficients in Equation 7. For robustness we present wild-cluster bootstrap *p* values for the estimates of β_1 and β_2 at the bottom of the table. As discussed above, because we had a directional hypothesis, we can use one-sided tests and achieve reasonable statistical power despite a

⁹ At the time of our research, 500 CFAs were worth about one US dollar and the GDP per capita was about four dollars per day. Thus subjects were playing with roughly a half-day's wages in a one-hour session.

FIGURE 3. Lab Contribution and Years Served in Ivorian Army and Gbagbo Militia

modest sample size. In line with our hypothesis, militia members gave more to the group the longer they served. Professional military members exhibited no such correlation. The findings suggest that militia members gave about 26 CFAs combined in the two games for each extra year served, whereas the amount given by professional military did not increase with years served. Militia members who served the average of about six years contributed on average about 150 CFAs more than a comparable SAG member.

Figure 4 illustrates desertion and killed-in-action rates for the first platoonmates of the Ivory Coast sample. Neither the SAG nor NSAG subsamples exhibit clear trends in desertion percentages, eliminating fears that the results in Table 2 were due to higher desertion percentages of less pro-group types early in the sample. Unsurprisingly killed-in-action rates rose for SAG members at the end of the first period of hostilities (2005–08).

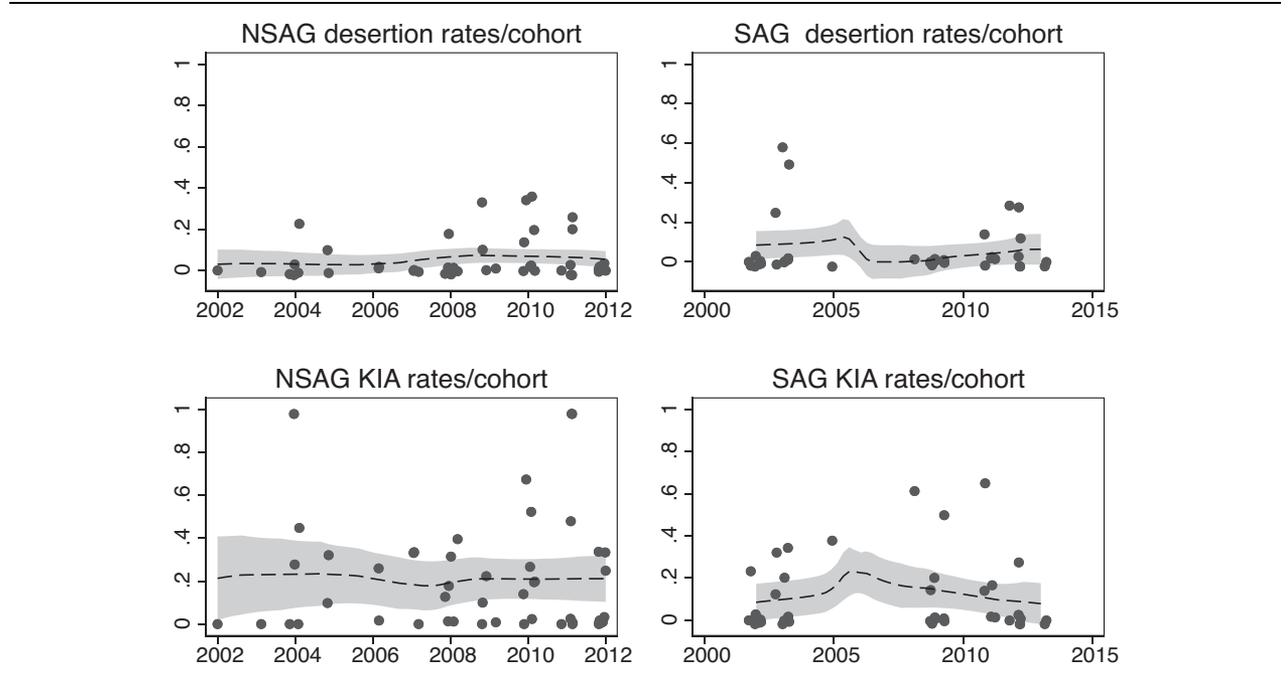
REPLICATION WITH THE PESHMERGA

To further address issues of external validity, replicability, and other threats to validity, we returned to the field in the summer of 2016 to gather the same lab-in-the-field measures from Peshmerga fighters in Iraqi Kurdistan. The Peshmerga provide a useful test case because they transformed from a NSAG to a de facto SAG after the American-led invasion of Iraq in 2003. As with our Ivory Coast data we are testing a specific directional hypothesis. We capitalize on this by using a one-sided test, which offers better statistical power given the challenges of obtaining a large sample size.

The Peshmerga were formed after World War II as the military arm of the Kurdish Democratic Party (KDP) to fight a guerrilla war for Kurdish independence. In 1975 a breakaway party, the Patriotic Union of Kurdistan (PUK), developed its own Peshmerga forces and also engaged in a guerrilla campaign against the Iraqi state. After the first Gulf War in 1992, Peshmerga forces of the KDP and PUK waged a civil war over control of the more autonomous Kurdish region of Iraq. The Washington Agreement of 1998 brought an end to that civil war, although there was little cooperation between the two parties' forces. After the US-led invasion in 2003 destroyed the Iraqi state, the Peshmerga took over all security functions in Iraqi Kurdistan, including an intelligence service and a gendarmerie. Peshmerga forces are now paid by the Kurdish state under the Ministry of Peshmerga affairs, but most units are still associated with a party and are still primarily loyal to their party (BBC 2014). Both main parties have training centers for their troops. We visited the KDP's training center and observed it to be very modern and professional. Trainers from several NATO countries were present to instruct recruits.

The make-up of the Peshmerga changed dramatically in January 2014 and after when the Islamic State invaded Iraqi Kurdistan, quickly capturing large swaths of territory. The Peshmerga were flooded with volunteers eager to liberate ancestral lands and farms. At the same time, Peshmerga ranks swelled with Syrian Kurds fleeing IS oppression. Given the very different populations that joined the Peshmerga after the IS invasion, any differences between the pre- and post-2013 make-up of the Peshmerga are overdetermined. We did not have any specific hypotheses about how those differences would manifest in the lab (if at all), but we

FIGURE 4. Desertion and Killed-in-Action Percentages in Ivorian Army and Gbagbo Militia



Note: See notes to Figure 2 for an explanation of the graphs. The left graphs show desertion and KIA rates for the NSAG (Gbagbo militia), and the right graphs show it for the SAG (Ivorian Army).

thought it was appropriate to control post-2013 recruitment in light of the very different circumstances in which recruits from that period joined.

We implemented the same two laboratory activities we conducted in Nepal and the Ivory Coast. We gave each subject an endowment of 2,500 Iraqi dinars for each activity, which, combined, was worth about five US dollars in the summer of 2016. Peshmerga soldiers reportedly receive a monthly stipend of about 200 to 300 US dollars, so their total endowment over both activities represented about a half-day’s pay for roughly two hours of their time. We conducted 17 different sessions, which due to some missing data yielded 192 different participants. Sessions were generally conducted in Kurdish. Sessions with Syrian refugees were conducted in Arabic. We held nine at a Peshmerga training facility, seven in political party halls, and one on the front lines at a Peshmerga forward operating base.

According to our argument the Peshmerga should have spent relatively more scarce training resources on inculcation prior to the American-led invasion and then switched to relatively more intensive technical training after. As a result, an individual soldier’s pro-group preferences should increase relatively more rapidly during their service prior to the American-led invasion and then those increases should slow after that (controlling for the period of the Islamic State invasion as mentioned above). We do not have over-time observations of each soldier’s behavior pre- and post- the American-led invasion however. The best we can do is estimate the increase in soldiers’ pro-group behavior

per year of service controlling for whether they served prior to the American invasion or not. If our hypothesis is correct, those who joined after the American invasion should exhibit slower per-year increases in their pro-group preferences (measured by laboratory contributions) than those who joined earlier, but the per-year estimate of those who joined prior to the American-led invasion is a weighted average of the Peshmerga’s two different hypothesized training regimens and therefore is smaller than the actual per year growth during the preinvasion period.

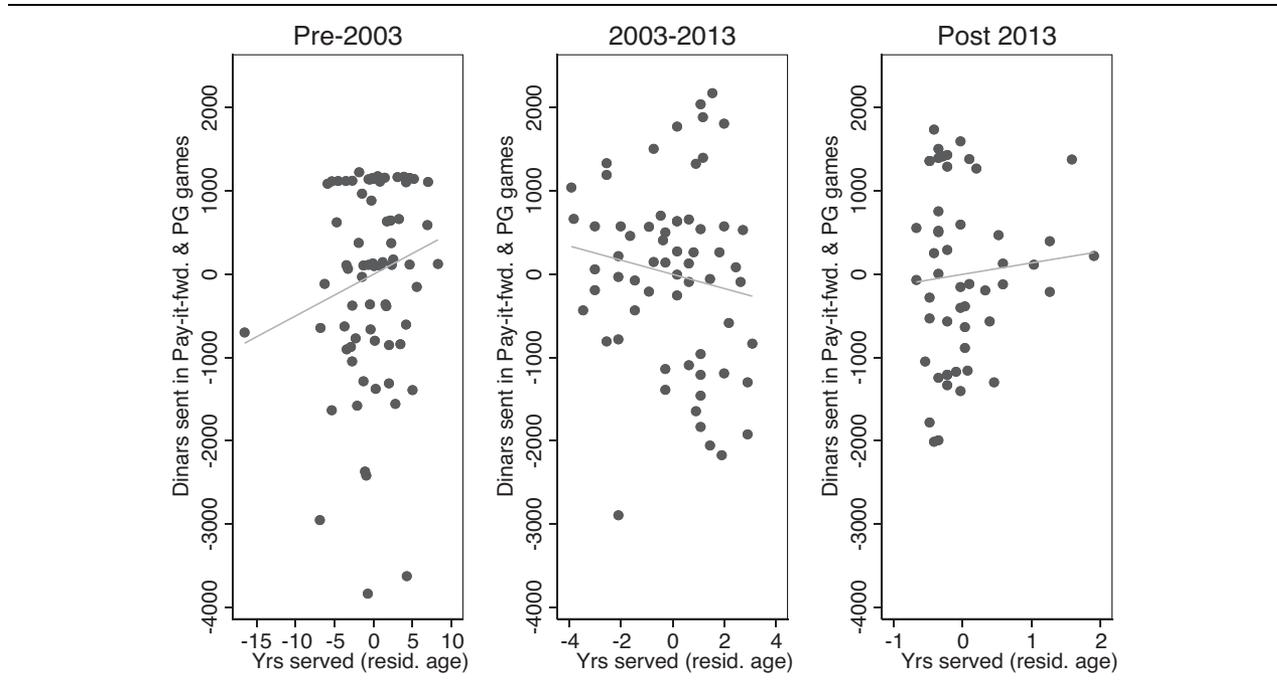
We estimate the following equation:

$$c_i = \alpha_1 + \beta_1 \text{Years served}_i + \beta_2 \text{Years served}_i \times \text{joined after 2003}_i + \alpha_2 \text{joined after 2003}_i + \mathbf{X}_i \gamma + \varepsilon_i. \tag{8}$$

As before, the dependent variable is combined contributions in the two laboratory activities, ε_i is a well-behaved error term, β_1 is the effect of each successive year of service on the contributions of Peshmerga who joined before 2003, and $\beta_1 + \beta_2$ is the effect of each successive year of service on the contributions of Peshmerga who joined after the start of 2003. From **Hypothesis 1'** we expect $\beta_1 > 0$ in Equation 8, and from **Hypothesis 2'** we expect $\beta_2 < 0$.

Figure 5 shows bivariate relationships for joiners from the pre-2003 era, between 2003 and 2013, and then post 2013. We provide balance statistics for these three subsamples in the supplementary materials. Given that these periods cover different decades,

FIGURE 5. Lab Contribution and Years Served in Peshmerga for Various Cohorts



Note: Residual-residual plots, controlling for age, of the relationship between combined amounts given and years served for pre-2003, 2003–13, and post-2013 entry cohorts. The supplementary materials contain a version of this graph without the pre-2003 outlier point, showing very similar results.

obviously age confounds the analysis. Thus, the graphs are residual-residual plots, controlling for age. Table 3 presents estimates of the primary coefficients from Equation 8. As above, we use wild-cluster bootstrap to account for clustering by session and present one-sided tests given our directional hypotheses. The results confirm our expectations once we control for post-IS-invasion recruits. The first row shows that soldiers who

joined before 2003 contributed 50 dinars more for each year they served. This estimate is significant at the 5% level in a one-tailed test. We expected the results to be somewhat weaker for this group than for NSAG groups discussed above because the estimate is a weighted average of the effect of the NSAG training regimen and the post-2003 SAG training regimen that we hypothesize stressed inculcation relatively less. Still,

TABLE 3. Years Served and Laboratory Contributions among Peshmerga Cohorts

	(1)	(2)	(3)
	Full sample	Pre-2013 only	Full sample
Years in movement	53.23*	51.41*	52.86*
	(31.34)	(30.66)	(31.40)
Post-2003 × years in movement	-21.59	-141.68*	-139.85*
	(46.00)	(76.83)	(76.07)
Post-2003	-3,364.62**	-4,938.08**	-4,871.14**
	(1,079.60)	(1,351.76)	(1,344.67)
Post-2013 × years in movement			218.90
			(203.92)
Post-2013			3,068.89*
			(1,327.38)
Observations	192	141	192
Wild-cluster bootstrap one-sided <i>p</i> value (NSAG)	0.02	0.03	0.02
Wild-cluster bootstrap one-sided <i>p</i> value (SAG–NSAG)	0.29	0.05	0.06

Note: OLS estimates; outcome variable is combined amount sent in games, in dinars. Wild-cluster bootstrap is clustered by 17 laboratory sessions. One-sided tests: **p* < 0.05, ***p* < 0.01.

the effect of inculcation during the pre-2003 period appears to have been substantial enough to generate a large, positive weighted-average estimate.

Also as hypothesized, the relationship for the soldiers who joined after 2003 is significantly lower compared with pre-2003 recruits. In fact the estimated trend for post-2003 joiners (adding β_1 and β_2 from Equation 8) is smaller and even negative when we account for the post-2013 joiners. We can infer from these results that soldiers who joined after the Peshmerga became a de facto SAG in 2003 did not become more pro-group over time, suggesting that inculcation became a more minor part of their training compared with those who joined when the Peshmerga were clearly a NSAG. The second and third columns of Table 3 show that failing to control for the post-IS invasion period introduces bias in characterizing differences before and after 2003. Either dropping the post-2013 observations (column 2) or including the post-2013 interactive term (column 3) increases the magnitude of post-2003 interactive term by a factor of almost seven.

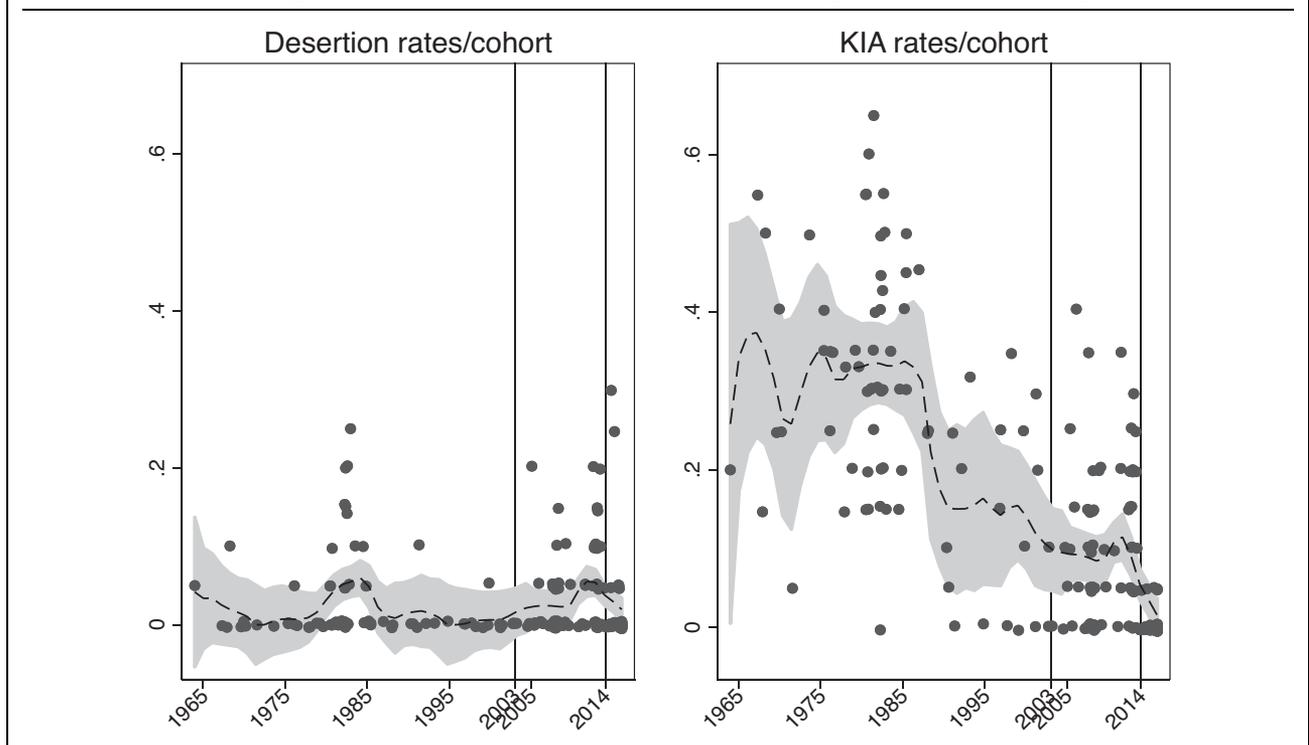
As in Nepal and the Ivory Coast, there is no clear pattern in the desertion rates of Peshmerga who joined before 2003 or those who joined in 2003 or after, as shown in Figure 6. There is a bump in desertion percentages in first platoons in the early 1980s during the time of the Iran–Iraq War. There is also some increased volatility around the time of the IS invasion, but it does not change the main interpretation. Parenthetically, killed-in-action percentages

match expected patterns. The rate dropped dramatically after the first Gulf War when the US enforced a no-fly zone over northern Iraq. The rate dropped a bit again after the end of the Kurdish civil war in 1998 and then again after the US-led invasion in 2003. Finally, feelings of guilt is not a plausible explanation for these findings. Unlike the soldiers studied by Bauer, Fiala, and Lively (2018), Peshmerga hold hero status in Kurdistan. We saw no indication that they feel they have committed past misdeeds for which they must compensate society, on the contrary.

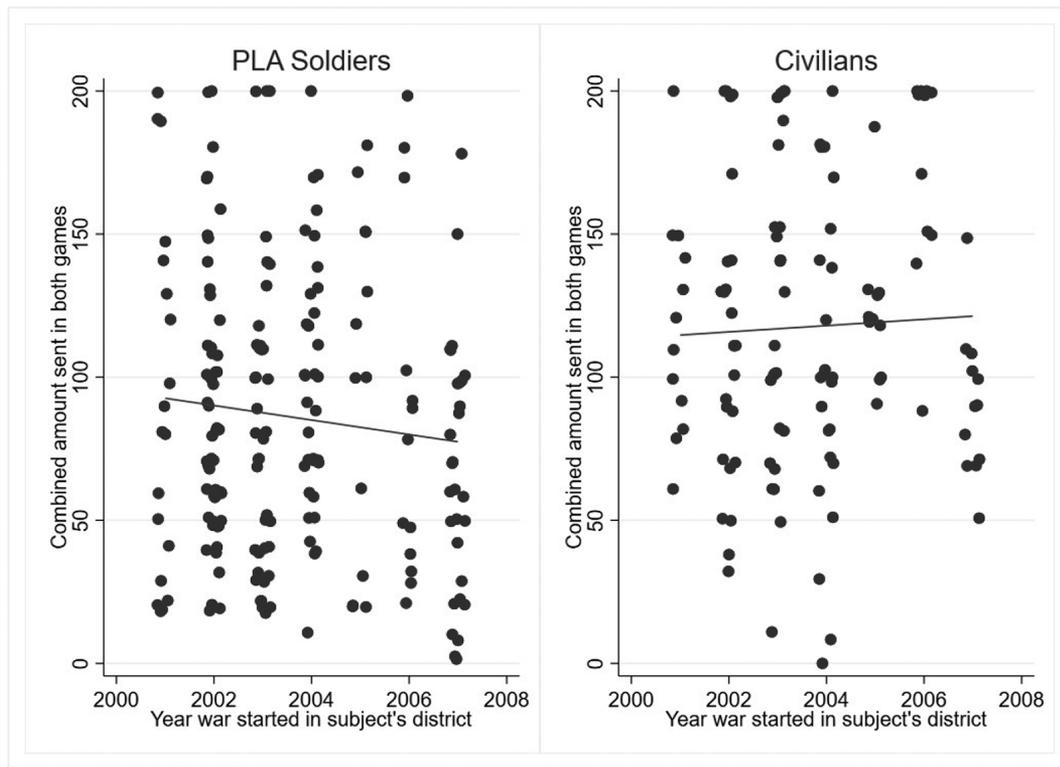
ADDRESSING POSSIBLE THREATS TO VALIDITY

The Ivory Coast and Peshmerga results address the potential concerns raised at the close of the “Evidence from Nepal” section. First we compared the behavior of NSAG and SAG members to show that, as hypothesized, SAG members did not make greater contributions for longer years of service but the NSAG members did. Second, our case selection addresses ideological content as a potential confounder. Gbagbo’s militias’ ideology was xenophobic and exclusionary, not universalistic and egalitarian like the Maoists. The two NSAGs used dramatically different messages to instill intrinsic motivations, but the behavior of the two groups in the lab was strikingly similar.

FIGURE 6. Peshmerga Desertion and Killed-in-Action Percentages with Various Key Dates



Note: See notes to Figure 2 for an explanation of the graphs. Two key dates, the coalition invasion in 2003 and the Islamic State invasion in 2014, are indicated with vertical lines.

FIGURE 7. Timing of Maoist Activity in Home Region and Laboratory Contributions

Note: The x-axis shows the year in which cumulative conflict-related deaths reached at least 100 (“war started”) in a subject’s district, as a measure of the onset of Maoist operations in that district. The data for the x-axis are from the Informal Service Sector (INSEC) yearbooks (1996–2007), as reported in Do and Iyer (2010). The y-axis shows game results from sessions with PLA combatants and civilians originating from the respective districts.

Third, our Ivory Coast results cannot be due to the clandestine nature of the NSAG because the Gbagbo militias were not covert and were indeed supported by the Gbagbo regime. Fourth, Gbagbo’s militias did not need popular support to fund their war effort. Gbagbo paid and equipped the militias with the sale of “blood diamonds” and by siphoning money from the national treasury (Hinshaw 2011; McClanahan 2011). Consistent with Weinstein’s prediction for a group that did not rely on public support for resources, Gbagbo’s militias were abusive of the civilian population (Human Rights Watch 2011). Still, Gbagbo militia members’ behavior in the lab was strikingly similar to the Maoists’. Fifth, external validity is now less of a worry because we found the same patterns of behavior in a Maoist insurgency in South Asia, an ethnic militia in West Africa, and a nationalist secessionist movement in Kurdistan. Sixth, our evidence from Kurdistan was within group, assuaging fear about comparing across groups and showing that our logic applies even when the same group transitions from NSAG to a de facto SAG. Finally, our results address possible concerns about low statistical power leading to nonreplicable results because the NSAG results replicated as expected in the Ivory Coast and Kurdistan.

We can now return to a fuller discussion of whether the greater sociality exhibited by longer-serving NSAG members in our sample was due to self-

selection rather than inculcation. To summarize the self-section argument, if people who derived greater social utility from being a member of these organizations joined earlier, it is possible that the relationship between time served and contributions in the lab was not due to inculcation but simply an artifact of their joining earlier, and thereby, serving longer. The pro-group self-selection argument must explain why people who did not have sufficient reason to join early in the cause found it worthwhile to do so later. We can think of two such explanations. First anecdotal reports indicate that the Maoists engaged in inculcation among civilians in the areas that they controlled. Indeed gaining popular support among civilians is a centerpiece of Maoist strategy. This inculcation of civilians may have increased the support among some who were previously unwilling to fight for the movement above the necessary level for joining later in the war.¹⁰ If this phenomenon were occurring, a random sample of civilians from areas where Maoists operated longer should exhibit greater prosociality

¹⁰ This argument would require that inculcation of civilians was less powerful than inculcation of soldiers, a plausible argument given that soldiers lived together and inculcation was part of daily life, whereas civilians would only receive inculcation at specific events designed for that purpose.

through higher contributions in the lab. We do not find this to be the case. As shown in Figure 7, if there is a relationship between Maoist activity and contributions in the lab, it is in the wrong direction: civilians from areas where the Maoists operated later gave more in the laboratory activities than civilians where the Maoists operated earlier *ceteris paribus*.

A second possibility is that NSAG success over time raised the expected material benefits of being a member of the movement, thus affecting the profile of those who joined over time. Later joiners may have joined for the greater expected material rewards even though their base level of pro-group preferences (before they were inculcated by the NSAG) was not by itself sufficient to induce them to join. This explanation would require a different theoretical model than we have in mind, one in which NSAG leaders' promises of future rewards were credible. Although such a theoretical model could undoubtedly be constructed, the larger problem for this explanation is that it is inconsistent with the patterns in the Ivory Coast data. Whereas the Maoist probability of winning the war may have improved over time, Gbagbo's militia's fortunes worsened. Thus if pro-group self-selection into Gbagbo's militias did vary over time, those who joined later would have to be more pro-group, "heroically" joining an increasingly desperate cause. Pro-group self-selection would work against the pattern in Table 2, providing greater confidence that the results from Nepal are due at least in part to inculcation as well. Although it is possible that the data-generating processes in the two cases are idiosyncratic, an explanation that is consistent with both simultaneously is that the positive relationship between contributions in the lab and years served is due to cohesion-creating inculcation by the groups themselves. In short, explaining the patterns in both Nepal and Ivory Coast requires that the greater contribution for each year served was at least in part due to positive changes in sociality while the soldiers served in the movement.

A further potential threat to validity is that the marginal effect of inculcation (σ in the model in the "Empirical Model" section) may be higher in NSAGs than for SAGs. This could occur for two reasons. First people with larger σ s may select (or be selected into) NSAGs more than SAGs. Put another way, NSAG soldiers may be more susceptible to inculcation than SAG soldiers. This is different than the selection argument just discussed (and countered) above. Instead, this argument would be that people who will obtain greater intrinsic utility as a result of inculcation once they are in the group are somehow nonrandomly selected into NSAGs. How such nonrandom selection would occur is problematic: it would have to distinguish and select recruits based on their future response to inculcation, which, at the time of recruitment, is unknown because inculcation has not yet begun.¹¹

Alternatively NSAGs' σ s might also be larger simply because they are better at converting inculcation into

changes in their soldiers' preferences. This argument has difficulty explaining the Ivory Coast results. Both the SAG and the NSAG were motivated by the same ideology. Why the pro-Gbagbo militias would be better than state forces at converting that ideology into pro-group preferences is unclear. This explanation has an even harder time explaining the Peshmerga results in which we observe the predicted change in contributions *within the same group* as it changed from a NSAG to a de facto SAG. To claim otherwise would be to imply that the Peshmerga leadership (who served across this period) somehow forgot how to convert as effectively inculcation into preference change as they transformed from a NSAG to a de facto SAG.

Finally NSAGs frequently possess less sophisticated weaponry than SAGs. If so, then the marginal benefit for NSAGs to invest in technical training may be lower. We discuss this point more fully in the supplementary materials. The problem with this explanation is that, for SAGs at least, the sophistication of their weaponry is endogenous. Thus, this explanation does not fully answer our puzzle, which requires an account of not only why SAGs are less cohesive than NSAGs but also why SAGs chose weaponry that produces less cohesiveness even when less sophisticated and less expensive weaponry is available.

CONCLUSION

Non-state armed group cohesion, despite material adversity, is a central puzzle in the study of insurgency (Blattman and Miguel 2010). This puzzle is all the more striking when one considers the rapid disintegration of SAGs in contexts of state collapse, such as in Iraq and Afghanistan. We argue that NSAGs' inability to credibly promise future rewards forces them to rely more heavily than their state counterparts on immediate social selective incentives *ceteris paribus*. In order to increase these social selective incentives, NSAGs must inculcate their troops more heavily than do SAGs. The result is higher levels of intrinsic social motivation in NSAGs as compared with that of their SAG counterparts. We provide evidence for this hypothesis from the behavior of state and non-state soldiers in Nepal, Ivory Coast, and Kurdistan by using laboratory activities to uncover their underlying social rewards for pro-group behavior. We also presented qualitative evidence that NSAGs stressed inculcation over technical military training to a greater extent than SAGs did.

Our findings have potentially important implications for counterinsurgency strategy and postconflict ex-combatant reintegration. Scholars have noted the durability of NSAG networks as well as the varied political, economic, and social roles that such networks take on after ostensible demobilization (Daly 2016; Daly, Paler, and Samii 2020; Reno 2010; Themnér 2015). If we are right that members of NSAGs are more highly inculcated than soldiers in SAGs, *ceteris paribus*, then countering insurgency and violent extremism and reintegrating former members of these groups into society will require more than appeals to their material interests. If these militants have been inculcated into thinking that they are

¹¹ Obviously we are not claiming that members are randomly selected into groups (clearly they are not), only that it is hard to see how any selection process could be correlated with σ .

doing good by committing acts of violence, they will have to be disabused of those beliefs. Programs will have to be designed to help these former militants find new, non-violent, social causes to replace the one with which they have forged strong social ties. The burden of countering these combatants' extensive social inculcation perhaps brings with it an opportunity though: these militants have exhibited an extraordinary willingness to sacrifice themselves for a cause. If that same spirit of self-sacrifice can be turned toward nonviolent pursuits for the good of society, then the violence these groups have committed may to some extent be rectified.

SUPPLEMENTARY MATERIALS

To view supplementary material for this article, please visit <http://doi.org/10.1017/S000305542200020X>.

DATA AVAILABILITY STATEMENT

Research documentation and data that support the findings of this study are openly available at the American Political Science Review Dataverse: <https://doi.org/10.7910/DVN/RCT2YX>.

ACKNOWLEDGMENTS

We would like to thank Binod Paudel, Fabrice Gouzo, and Kamaran Mohammed for invaluable research assistance. We thank New York University and the Folke Bernadotte Academy, Sweden, for its generous financial support of this research. The views expressed herein are not necessarily those of the Government of Sweden. We are grateful for the helpful comments we received from Eli Berman, Ruth Dittmann, Aila Matanock, Betsy Paluck, Bilal Siddiqi, Jacob Shapiro, and Austin Wright, as well as seminar participants from the American Political Science Association, Empirical Studies of Conflict, Folke Bernadotte Security Sector Reform Working Group, Juan March-Carlos III, London School of Economics, Northeast Workshop in Empirical Political Science, Social Sciences Center Berlin, University of California-Berkeley, and University of Pittsburgh.

FUNDING STATEMENT

This research was funded by The Folke Bernadotte Academy, Grant Number 012-10-01192-3.

CONFLICT OF INTEREST

The authors declare no ethical issues or conflicts of interest in this research.

ETHICAL STANDARDS

The authors declare the human subjects research in this article was reviewed and approved by the New York University Committee on Activities Involving Human Subjects (UCAIHS) under certificate numbers HS#11-8648 and IRB#15-10706. The authors affirm that this article adheres to the APSA's Principles and Guidance on Human Subject Research.

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