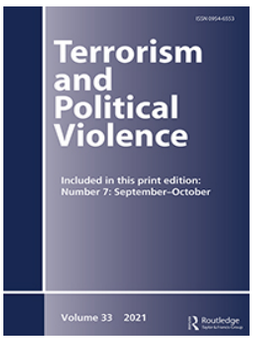

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Where Terror Lies: Misrepresentation of Extremist Attitudes and Terrorist Attacks in the Sahel

Steven E. Finkel[a], John F. McCauley[b], Michael Neureiter[c], and Christopher Belasco[d]

[a]Political Science, University of Pittsburgh, Pittsburgh, Pennsylvania, USA; [b]Government and Politics, University of Maryland, College Park, College Park, Maryland, USA; [c]Ludwig-Maximilians-Universität München, Geschwister-Scholl-Institute of Political Science (GSI), Munich, Germany; [d]Graduate School of Public and International Affairs, University of Pittsburgh, Pittsburgh, Pennsylvania, USA

ABSTRACT

Researchers have commonly treated misrepresentations in survey responses as an impediment to the accurate measurement of a variable or construct of substantive importance. This study builds on that approach and considers whether misreporting bias regarding support for violent extremism—both under- and over-reporting—may then have consequences for how terrorist violence itself unfolds. Using data from nearly 4,000 respondents in 35 communes in Burkina Faso, Chad, and Niger collected just prior to a recent wave of terrorist attacks, we find that communes where individuals under-report their true support for violent extremism—as measured with unobtrusive experimental methods—have a greater probability of experiencing subsequent Islamist attacks, controlling for socio-demographic characteristics of the commune, country-level proximity effects, and other time-varying factors. The findings raise important considerations regarding the measurement of extremist support, and they suggest a new tool for identifying communities potentially susceptible to terrorist violence.

KEYWORDS

Violent extremism; preference falsification; terrorist attacks; Africa; experiment

Introduction

Overt support for violent extremism remains well outside of the mainstream around the world.[1] The very fact that public opinion so roundly rejects extremist violence by non-state actors, however, also calls into question the data upon which this shared perspective rests. Like racism, homophobia, and other forms of intolerant or taboo behavior, attitudes expressed overtly through surveys almost certainly mask some degree of support for violent extremism even as they reveal its widespread repudiation. There may also exist systematic reasons for some people to exaggerate their true support for violent extremism in certain contexts. In other words, attitudes regarding violent extremism are highly susceptible to preference falsification, in numerous and complex ways. As a result, scholars increasingly stress that unobtrusive or covert measures of support for violent extremism, typically assessed through experimental means, constitute a superior measurement strategy.[2]

Despite this important progress in research aimed at understanding and countering violent extremism, a critical issue remains unaddressed: we do not yet know how the misreporting of true support for violent extremism might influence terrorism-related outcomes on the ground. Both in political science and terrorism studies, misreporting bias is typically viewed as a measurement problem, not a pattern with potential real-world consequences.

This study builds on that approach and considers the possibility that under- and over-reporting of support for violent extremism may also be phenomena of substantive interest, with potential implications for how terrorist violence itself unfolds. We begin by exploring the individual-level features that

CONTACT Steven E. Finkel finkel@pitt.edu Political Science, University of Pittsburgh, Pittsburgh 15260, PA

correlate with a tendency to disguise true preferences related to violent extremism, and we then use those individual-level features to examine whether macro, community-level signals might have consequences for the locations of terrorist attacks. Our motivating rationale is that differences in expressed and true attitudes regarding violent extremism provide key information to both terrorist groups and state security forces when aggregated at the community level. Misrepresentation of attitudes at the communal level may thus influence which communities are protected, which are most susceptible, and where terrorist attacks ultimately occur.

To examine the potential consequences of misreporting bias, we rely on data from three countries in the African Sahel: Burkina Faso, Chad, and Niger. Using data collected across 35 communes in 2013, with overt attitudinal measures as well as unobtrusive, experimental measures from a total of 3,870 respondents, we find strong evidence of misreporting of extremist attitudes, with better educated and wealthier respondents more likely to under-report their true support for violent extremism and poorer respondents more likely to over-report their true preferences. Further, when aggregated to the community level, misreporting of extremist support indeed correlates with terrorist outcomes: communes where under-reporting is highest are most likely to experience subsequent terrorist attacks. We take the findings as evidence that community-level misreporting bias as measured by the processes we describe in this study reflects similar real-world tendencies that affect the decisions of key actors, thus shaping the likelihood of attacks in certain locations versus others.

The study contributes to the existing literature in three important respects. First, to our knowledge, it stands as a novel study of the substantive effects of misreporting biases on violent extremism. Numerous studies have underscored the ways in which preference falsification affects the measurement of attitudes related to war, extremism, and insurgency in violent contexts.[3] This study builds on that research to demonstrate the potential consequences of misreporting biases. Given the challenges of isolating exogenous variation in misreporting at the commune level and causally linking that variation to subsequent attacks, we stress that the study should be viewed as observational rather than causally identified. Nevertheless, the argument and empirical results offer insights not yet considered in the literature.

Second, we base this research in the understudied yet increasingly critical region of the Sahel in Africa. Relatively little systematic research has focused explicitly on the Sahel, an impoverished region at high risk of climatic crisis, institutional breakdown, and terrorist recruitment that some analysts see as the new epicenter of extremism.[4] Third, the study relies on a large-scale survey that incorporates both overt, observational measures and responses to randomly varied experimental questions, in order to accurately measure the under- or over-reporting of support for violent extremism. By collecting these data in a volatile region beginning just prior to the onset of regular attacks, we are also able to evaluate the relationship between misreporting patterns and subsequent attacks with little fear of endogeneity or reverse causality.

The findings from this study raise important considerations for scholars and practitioners interested in democratic progress and peace. As Byman (2019) notes, terrorism does more than take innocent lives; it also undermines democracy.[5] Identifying support factors for violent extremism, as well as areas that are particularly susceptible to extremist violence, thus represent crucial pieces of broader democratic initiatives to keep communities safe and to shift predispositions toward support for democratic norms.[6] By detecting support for violent extremism through tacit means and identifying a previously unrecognized risk factor for communities, the results also can contribute to practical efforts to reduce extremist violence, thereby allowing broader pro-democracy initiatives a greater chance to flourish.

Theoretical foundations

Which individuals under- and over-report support for violent extremism?

Research suggests that misreporting is a process at least partly under the respondent's control, done for strategic rather than purely unconscious reasons as individuals calculate the subjective costs and benefits of reporting true versus falsified preferences.[7] For example, individuals may report socially

desirable attitudes either to obtain social approval or to maximize self-worth by reducing cognitive dissonance.[8] Guilt or embarrassment can also drive the decision to disguise taboo views, as can the fear of social repercussions such as informal sanctions or harassment.[9]

According to Snyder (1987),[10] tendencies toward social desirability are stronger among individuals who are willing and able to self-monitor, i.e. to regulate their presentations of self, behaviors, and emotions. Self-monitoring is particularly prevalent among highly educated individuals, who intuit "correct" or socially approved responses and feel greater pressure to present their attitudes or behaviors in alignment with those expectations.[11] This pattern has been confirmed consistently in the voting turnout literature as well as other public opinion literatures, such as those examining racial and immigration attitudes.[12]

Given the sensitivity of support for insurgency and violent extremism, respondents may disguise their true attitudes in this context for a number of reasons as they consider the costs and benefits of sharing their private preferences in public. On one hand, citizens may lie with the express purpose of abetting terrorist groups operating in the area, perhaps even as they participate in such groups themselves.[13] This tendency reflects the strategic, conscious choice to deceive that Jiang and Yang (2016)[14] and others describe. On the other hand, respondents may be generally sympathetic to the arguments underpinning violent extremism but may recognize the taboo nature of such views or feel embarrassed when confronted by survey enumerators, and may thus self-monitor for all of the reasons that respondents typically under-report taboo views.[15] Finally, some respondents may actually *over*-report their support for violent extremism if they believe that doing so will put them more firmly in line with their peers, or if they fear the militant groups that may be active in their areas.[16] This may be particularly true for poorer respondents who may be more vulnerable to the violence associated with extremist groups and civil conflict.[17]

Thus far, list and endorsement experiments have been used to elicit "true attitudes" on sensitive questions, thereby revealing previously undetected levels of support for militant violence,[18] support for wartime combatants,[19] anti-counterinsurgency efforts,[20] and retaliation against other ethnic groups.[21] Fair et al. (2018)[22] and Blair et al. (2013)[23] further examine the socioeconomic factors that correlate with self-monitoring of sensitive attitudes. They find negative correlations between poverty and true support for militant violence, countering the popular view that poverty drives support for militant violence.

At the individual level, we thus expect that respondents with higher socioeconomic status, particularly in terms of income, education and employment, will exhibit greater under-reporting of their true support for violent extremism in the Sahel. Poorer respondents should be less inclined to under-report their true support for violent extremism and may, in fact, face greater pressures to express support for terrorism that outpaces their own true attitudes.

How might misreporting of extremist support affect the likelihood of terrorist attacks?

While scholars have long noted the effects of preference falsification on both the proper measurement of sensitive attitudes and the accurate assessment of their relationships with other theoretically meaningful variables,[24] much less attention has been accorded to the real-world effects that might follow from community-wide misrepresentation of attitudes on topics such as violent extremism.[25] We explore the possibility that substantive consequences follow from those misreporting biases. We propose a series of ways, grounded in theory and previous literature, in which these phenomena may be related, though due to limitations in the accessibility of data we cannot empirically test the potential mechanisms that we identify.

First, we consider the importance of secrecy and deception to those who engage in or abet terrorist activities,[26] which may create a link between under-reporting and subsequent attack outcomes. As Lai (2007) notes, "the ability for [terrorist] groups to recruit, organize, and train is likely to be contingent on their ability to avoid detection by the government."[27] Further, many of the secondary activities upon which terrorist groups depend, such as drug smuggling, money laundering, and kidnapping,

leave them susceptible to disruption from security and intelligence services if their interests and intentions are known publicly. Moving beyond terrorist groups to their potential supporters, Matanock and Garcia-Sanchez (2018) note that those who rely on insurgent groups for protection "should both be unsupportive of counterinsurgents and. . .hesitant to reveal that information."[28]

Statements from terrorist groups themselves bear out the importance of detection avoidance. Throughout the 1970s, the violent Islamist organization Takfir wal-Hijra listed the concept of *taqiyyah*, the enshrined Islamic legal right to deceive one's enemy in order to avoid harm to the self or group, as its central pillar.[29] More recently, Al Qaeda has listed a similar goal in its training manual: "to avoid detection at all costs."[30] Its followers are advised to blend into society and remain silent about their religious ideology.[31] In its *Safety and Security Guidelines for Lone Wolf Mujahideen and Small Cells* booklet, the Islamic State (ISIS) asks supporters to "surprise the enemy," "make sure to not look particularly attached to religion," or even to "wear a neckless showing a Christian cross."[32] In the Sahel, militants are frequently encouraged to blend in with local populations.[33]

We thus suspect that communities with a larger share of terrorist group supporters may be more likely to under-report community-level support for violent extremism. To the extent that extremists conduct attacks close to home,[34] under-reporting communities would then also be more likely to suffer extremist violence.

It may appear counterintuitive to suggest that terrorists tend to attack close to home, in the very communes where they live or where their abettors downplay their true support. Yet, while terrorists may be unlikely to attack their own families and supporters, the same would not be true of attacks on susceptible or important targets within their communes. Indeed, the event-level data we use suggest that the targets are frequently high-value ones within the attackers' communes. In July of 2015, Boko Haram militants attacked both a civilian prison and a group of professional workers in the town of Diffa, Niger, where many militants had settled.[35] In April of 2015 in the commune of Mamdi, Chad, local extremists ambushed market participants in a planned disruption of village safety and economic activity. Keeping in mind that militants in the region frequently infiltrate communes and remain in the shadows, these kinds of localized attacks against valuable targets within one's commune may be operationally efficient.[36] Thus, consistent with an extensive literature documenting a greater likelihood of attacks near terrorists' homes,[37] we expect that, in addition to the under-reporting of violent extremist support that amplifies the likelihood of an attack, proximity to terrorist cells or bases would also present a risk to communities in the Sahel.

A second factor that could link misreporting biases to subsequent terrorist attacks is the misallocation of government resources for security. Government security forces typically act with tactical efficiency but are constrained by the intelligence and information at their disposal;[38] in the Sahel region, resources for intelligence tend to be limited, and systematic under-reporting of a threat would temper suspicions regarding both the effectiveness of extremist groups and the local support that they enjoy. Meanwhile, governments are more likely to allocate resources to intelligence gathering and coercive capacity where those suspicions are highest, and where they detect overt support for violent organizations;[39] this follows again from the incentive that security forces face to pursue anti-terrorism goals with tactical efficiency given available intelligence. When governments underestimate support for violence, they misallocate intelligence-related and coercive resources and become more vulnerable to future acts of violence in those areas. For instance, following the 2005 London bombings, the British government acknowledged that it had not provided adequate resources for intelligence and policing agencies in the areas most susceptible to homegrown terrorist cells.[40] Furthermore, government efforts to repress terrorist activities can, in democratic settings, produce popular backlash,[41] creating additional incentives for governments to respond with precision in places where they fear threats are highest, to the neglect of places where overt threats are minimal.

The consequence is that communities in which under-reporting is more common would receive less attention from government security forces than the existing threat level merits, thus raising the risk of attack. Compounding that problem is that terrorist groups may perceive greater opportunities to attack in those locations where suspicions are lower than they should be. Analysts argue that

terrorist attacks by Al Qaeda in the Islamic Maghreb (AQIM) in Burkina Faso, Mali, and Cote d'Ivoire targeted Westerners in those countries precisely because of the weakness of security apparatuses that facilitated entrance, attacks, and exit while regional security concerns were focused elsewhere.[42] Speaking of the context in Niger, one intelligence expert noted that government security forces are unable to defend all of the vulnerable areas and thus prioritize those where security threats generate the most public attention, to the detriment of other communities.[43] As a result, communities in which under-reporting of support for violent extremism is more common may receive less surveillance and security than is necessary given the true threat level, thereby increasing the risk of subsequent attacks.

While the first two explanations are potentially casual, a third, correlational or compositional logic may also explain the link between misreporting and subsequent attacks: the same types of individuals who tend to misreport their support for violent extremism may be the types whom terrorist groups view as ideal or deserving targets. Aggregated to the community level, that would suggest that some communities may be more likely to both disguise their true preferences and be subjects of terrorist attacks. In particular, the likelihood of terrorist attacks may derive not from the preference falsification per se but instead from the simple presence of more educated and better off individuals in those localities (which, we noted, should correlate with greater under-reporting). Irrespective of provoking greater commune-level under-reporting, more educated localities may also be targets for terrorist attacks by virtue of a stronger presence of schools, western aid, and other features strenuously opposed by extremist groups in the region such as Boko Haram.[44]

Summary of expectations

Bringing together literatures and evidence on preference falsification and extremist attacks presents a series of possible hypotheses.

H1: At the individual level, better educated and wealthier respondents should be more likely to under-report their support for violent extremism, while less educated and poorer respondents may be more likely to over-report their levels of support.

H2: At the commune level, reporting bias will be associated with subsequent attacks.

As theorized above, terrorist groups' desire for operational secrecy could lead to more attacks in communities where extremist actors and supporters under-report their true preference for terrorism, if it is the case that extremists tend to launch attacks in their midst. Further, the tendency of governments to dedicate security resources to the places where overt support for extremism is highest may again suggest that attacks are more likely in communities where residents under-report their true preference for terrorism.

H3: The commune-level patterns will persist when accounting for a third compositional explanation—that sociodemographic features correlate with both misreporting and the likelihood of being targeted by terrorists.

Data

We examine the relationship between misreporting bias and subsequent attacks using original data collected in 2013 within the southern half of Niger, northern Burkina Faso, and the middle portion of Chad (see Figure A1 in the Appendix). This area, situated squarely in the Sahel of Africa, has become central to terrorist group operations: Boko Haram has moved north into Chad and Niger from its base in northern Nigeria, while Al Qaeda in the Islamic Maghreb and affiliated groups have descended into all three countries following government collapse and violence in Libya and Mali.[45] Numerous other

homegrown and externally based violent extremist organizations, such as Ansarul Islam, Islamic State in the Greater Sahara (ISGS), and Jama'at Nasr al-Islam wal Muslimin (JNIM), now have bases in the study area. According to the Armed Conflict Location and Event Data (ACLED) project,[46] the three countries together suffered nearly 40 attacks by violent extremist organizations in the two years following our data collection, and over ten times that many since. The Africa Center for Strategic Studies reports that, as collaboration between militant Islamist groups in the region has increased, it has become the most rapidly expanding terrorist context in the world.[47]

Data collection took place across 35 total communes in the three countries, between September and November 2013. Primary sampling units (PSUs) are either communes—the lowest geographic subdivision in rural areas, equivalent to small villages—or neighborhood arrondissements within larger cities. Respondents were selected using a multistage, clustered random sampling procedure with stratification by gender. Each first-level sub-national administrative unit in the study area, of which there are 19, was divided into sub-areas, creating a total of 35 such areas. Those sub-areas were in turn divided into potential PSUs, containing an average of approximately 200 households. Next, one PSU was randomly selected from each sub-area. Within each PSU, enumerators identified households using a fixed-interval procedure and randomly drew a respondent between the ages of 15 and 73 from within that household. Between 100–115 interviews were conducted in each commune or arrondissement; Table 1 summarizes the data collection timeline, the number of sampled zones, and the number of interviews per commune. Respondents provided responses to both overt, observational questions regarding their support for violent extremism and subtle, experimental questions on extremist support. Together, the measures allow us to decipher the degree to which each community's residents collectively misreport their true support for violent extremism.

To evaluate the relationship between preference falsification at the commune level and subsequent terrorist attacks, we rely on data on Islamist violence from the ACLED Project. ACLED provides information on the dates and locations of all reported political violence and protest events in over 60 developing countries in Africa and Asia between 1997 and the present. We code an Islamist attack as any event perpetrated by an Islamist organization that resulted in the injury or killing of state agents (*Islamist Violence against Government*) or civilians (*Islamist Violence against Civilians*).[48] Several of the attacks that occurred in sampled communities were perpetrated by Boko Haram in eastern Niger, near the group's areas of operation in northeastern Nigeria, with the others attributed to AQIM and other groups. We use a dummy variable, *Islamist Attacks*, that takes the value of 1 if either civilians or state forces are the targets of at least one violent attack by an Islamist organization in a commune-month, and 0 otherwise.

The timing of the survey data collection puts us in unique position to evaluate period-specific effects without serious concerns of an endogeneity problem. With the exception of Niamey, Niger, none of the communes included in our sample was exposed to Islamist violence prior to the start of data collection. However, in the two years following our data collection, about 23 percent of all communes included in our sample were the targets of Islamist attacks: state forces and civilians suffered 10 and 12 Islamist attacks, respectively, across eight different communes and in 18 commune-months during that period. We are thus able to use data from the survey—prior to the occurrence of terrorist attacks in the region—as a baseline indicator of extremist support and misreporting tendencies at the commune level, and to then evaluate subsequent patterns in terrorist attacks in communities

Table 1. Summary of data collection.

Country	Time period	PSUs	No. of respondents
Chad	Sept.-Oct. 2013	15	1,655
Niger	November 2013	10	1,101
Burkina Faso	Sept.-Oct. 2013	10	1,114
Total		35	3,870

that under-report versus those that over-report their support for violent extremism. We limit the post-survey period of evaluation to two years since a community's norms, residents, and collective attitudes will likely change over more extended periods of time.

Empirical strategy and results

Estimating misreporting bias in support for violent extremism

We define "misreporting bias" as the discrepancy between individuals' expressed or *overt* support for extremist violence and their true or *covert* support gauged via unobtrusive experimental measures such as list or endorsement experiments.[49] Respondents may provide consistent answers to overt and covert measures, in which case there is no evidence of misreporting. They may also support extremist violence covertly but not in their answers to direct questions (under-reporting bias), or support violence overtly but not in their answers to indirect questions (over-reporting bias). Rosenfeld, Imai, and Shapiro (2016)[50] have demonstrated that covert, indirect survey methods measure actual attitudes with the least bias.

We gauge individuals' overt support for violence in the name of religion using the following question:

> Some people think that using arms and violence against civilians in defense of their religion is justified. Other people believe that, no matter what the reason, this kind of violence is never justified. Do you personally feel that using arms and violence against civilians in defense of your religion can be often justified, sometimes justified, or never justified?

Responses were coded as 1 for "often," 2 for "sometimes," and 3 for "never," with additional categories for "don't know" and "refused."

Measuring proclaimed versus true attitudes requires distinct measurement strategies for each, which can nevertheless provide insight regarding the general phenomenon in question (here, support for violent extremism).[51] To measure *covert* support for extremist violence, we apply an endorsement experiment to measure individuals' support for a violent Islamist group, Al Qaeda in the Islamic Maghreb (AQIM), without asking them to overtly reveal their attitudes on this group directly. The endorsement experiment was designed as follows. First, respondents were randomly assigned to control and treatment groups, with one half of the sample assigned to each. Respondents in the control group were asked the following question:

> The World Health Organization recently announced a plan to introduce universal Polio vaccination across {Country}. To what extent do you approve of such a plan?
>
> (1) Not at all; 2) Somewhat; 3) Quite; 4) I don't know; 5) I refuse to answer.

Respondents in the treatment group were asked an identical question but were told that "*It is likely that Al-Qaeda in the Islamic Maghreb (AQIM), an Islamist group, will oppose this program.*" We measure communal support for AQIM as the difference in the aggregate proportions of individuals within a commune who did "not at all" approve of the polio vaccination in the treatment and control groups.

We regard this difference as an appropriate measure of commune-level covert support for violent extremism, for two reasons. First, endorsement experiments using militant group references as proxies for "militancy" or "militant policies" are common in the literature on violent extremism.[52] In other words, experimental treatments naming a particular group—such as AQIM in this case—effectively evoke sentiments regarding the broader group type. Second, we were careful to choose a policy, polio vaccinations, both that has broad resonance in communities in the region[53] and that AQIM would plausibly oppose. This experimental realism lends confidence to the responses from individuals in both the treatment and control groups. Importantly, randomization of the question versions ensures that all of the reasons individuals may have for supporting or opposing polio vaccinations that are not

related to the AQIM prime are equal in expectation for the treatment and control groups. Thus, any differences found between those groups reflect their specific attitudes toward AQIM as opposed to other, vaccination-related attitudes.[54] Further, because Al Qaeda in the Islamic Maghreb's violent tactics are well known throughout the region, even if a respondent were to approve of AQIM partially for reasons unrelated to their violent extremism (goods provision, religious purity, etc.), taking policy cues from AQIM very likely indicates that the respondent condones AQIM's use of violence as well, which is exactly what we hope to assess through the covert measurement process. In all three countries, substantially more individuals in the treatment group were "not at all" in support of the vaccination plan, which we infer as covert support for AQIM (see Appendix Figure A2). Overall, approximately 18 percent of our sample supported AQIM covertly, with these figures relatively consistent across the three countries.

Individual-level determinants of covert support

We follow Blair et al. (2013)[55] in assessing the individual-level determinants of covert support through regression models predicting responses to the policy question from treatment group status and a series of demographic variables entered both additively and in interaction with the treatment group indicator.[56] The interaction effect represents the additional impact of the demographic variable on the policy response among the experimental versus the control group, and thus serves as a test of whether individuals in that demographic group are more or less likely to support the extremist group that is cued in the experimental condition. To measure wealth, we use an additive index, *Income*, denoting how many out of thirteen possible household items such as a refrigerator, TV, and radio respondents have in their household. *Education* is measured on a 10-point scale ranging from no formal education to the completion of a postgraduate degree. *Employed* takes the value of 1 if a respondent reports being employed, and 0 otherwise.

Table 2 shows the results of ordered logistic regressions of approval of the polio vaccination plan, including country dummies and with standard errors clustered by commune. A negatively signed coefficient indicates a *negative* association between a variable and support for the vaccination program, and a lower level of support for the vaccination program as a result of exposure to the treatment—indicating *stronger* support for AQIM. Therefore, Models 1 and 2 indicate that individuals are *more* likely to support AQIM covertly as their levels of education and wealth increase. Model 3 shows a similarly signed effect for employment, though it fails to attain conventional levels of statistical significance.

We can convert the ordered logistic results into the predicted probability of opposing the policy (i.e. responding "not at all" to support for the vaccination program) in the control and treatment groups for individuals with different demographic characteristics. For example, among individuals with at least six items out of thirteen on the wealth scale, the probability of opposing the program in the experimental group is 45 percent, while in the control group the corresponding probability is only 17 percent. Among relatively less wealthy individuals, their probability of opposing the program is 37 percent in the experimental group and 22 percent in the control group. Among individuals who have received at least some secondary education, the probability of opposing the program in the experimental group is 41 percent, while in the control group the corresponding probability is only 17 percent. Among relatively less educated individuals, their probabilities of opposing the program in the experimental and control groups are 38 percent and 23 percent, respectively. These findings indicate that, as hypothesized, individuals with higher incomes and higher levels of education are more likely to support AQIM covertly than are less wealthy and less educated individuals.[57]

Comparing overt and covert support for violent extremism

We turn next to assessing the extent and determinants of misreporting bias itself, i.e., the discrepancies between responses to *overt* and *covert* extremist support. For the overt question, we take the answers that violence in the name of religion can be justified "sometimes" or "often" as evidence of open

Table 2. Results of the endorsement experiment: ordered logistic regressions of rejection of universal polio vaccination/support for AQIM.

	(1)	(2)	(3)
Income*Treatment	−0.13***		
	(0.04)		
Education*Treatment		−0.10**	
		(0.05)	
Employment*Treatment			−0.09
			(0.17)
Income	0.08***		
	(0.03)		
Education		0.09***	
		(0.03)	
Employment			0.11
			(0.16)
Treatment	−0.46***	−0.55***	−0.78***
	(0.14)	(0.15)	(0.11)
Burkina Dummy	0.40	0.43	0.38
	(0.25)	(0.25)	(0.25)
Chad Dummy	0.48***	0.49***	0.47***
	(0.17)	(0.17)	(0.16)
N	3,309	3,309	3,283
McKelvey & Zavoina R2	0.06	0.06	0.06

Standard errors in parentheses *** $p < 0.01$ ** $p < 0.05$.

support. The results indicate that, across the three countries, approximately one-quarter (24 percent) of the sampled population openly indicated support for violence in the name of religion. As noted above, we measure covert support for extremist violence as the commune-level difference in the proportion of individuals in the experimental and control groups who support the vaccination policy "not at all" once the AQIM cue is provided. Following this procedure, 18 percent of the sample expresses covert support via the experimental endorsement treatment. The overall difference between overt (24 percent) and covert (18 percent) support is statistically indistinguishable, though it is worth noting that average responses seem to fall on the side of over-reporting rather than under-reporting support for violent extremism, a tendency perhaps in keeping with the widespread poverty and disenfranchisement in the region.[58] As will be shown, however, there is substantial variation in the degree of over- and under-reporting, both among individuals of differing socio-demographic characteristics and across communes, with approximately half of the 35 communes in the study exhibiting under-reporting bias and half over-reporting.

To identify the individual-level correlates of misreporting biases, we dichotomize the measures of wealth and education. The first independent variable, *High Income*, takes the value of 1 if a respondent has at least six items out of thirteen, and 0 otherwise. Nine percent of all individuals included in the sample qualify as "wealthy" according to this measure. The second independent variable, *High Level of Education*, takes the value of 1 if a respondent has received at least some secondary education, and 0 otherwise. Overall, 20 percent of all respondents can be regarded as "highly educated."[59]

Table 3 shows that, consistent with H1, wealthy and educated individuals tend to *under-report* their support for violence in the name of religion, with a difference-in-proportions of at least 7 percentage points between overt and covert support. Individuals from modest socioeconomic and educational backgrounds, on the other hand, tend to *over-report* their support for violence, with a difference-in-means of at least 7 percentage points between direct and indirect support. The confidence intervals do not overlap, which suggests that socioeconomic and educational backgrounds are significantly associated with an individual's likelihood of either under-reporting or over-reporting their support for Islamist violence.

Table 3. Overt and covert support for violence in the name of religion.

	Covert	Overt	Difference
High income	28 percent	15 percent	0.13*** (0.06, 0.19)
Low to moderate income	18 percent	25 percent	−0.07*** (−0.09, −0.05)
High level of education	28 percent	21 percent	0.07*** (0.03, 0.12)
Low to moderate level of education	16 percent	25 percent	−0.09*** (−0.11, −0.07)

95 percent confidence intervals in parentheses *** $p < 0.01$ ** $p < 0.05$.

Misreporting biases and subsequent terrorist attacks

We next test the core question of this study: does misreporting bias correlate with subsequent Islamist terrorist attacks at the commune level? The dependent variable, *Islamist Attacks*, is drawn from the ACLED data using monthly intervals. Our main independent variable, *Commune-Level Under-reporting Bias*, is the commune-level difference between the percentage of respondents who covertly support an Islamist terrorist organization in the endorsement experiment and the percentage of individuals who openly support violence in the name of religion in response to the direct survey question, using data collected just prior to the onset of regular terrorist attacks in the region. We thus switch from individuals to the commune-month as the unit of analysis for these analyses.

We include several control variables to account for other factors that may influence the decision of Islamist groups to target civilians or state forces in a commune. *Spatial Lag* is a variable that takes the value of 1 if at least one Islamist attack occurred during the previous month in another commune located in the same country, and 0 otherwise. We expect Islamist attacks to have a proximity effect, that is, to spread across communes located in the same country. *Ramadan* is a dummy variable that takes the value of 1 during Ramadan months, and 0 otherwise. While Islamist organizations frequently call upon their supporters to consider Ramadan as a time to kill "infidels,"[60] Reese et al. (2017)[61] show that, contrary to conventional wisdom, militant actors tend to exercise restraint during important Islamic holidays. We also control for the distance in kilometers between a commune and the location of the closest Islamist group base, as identified in the ACLED data, as well as commune-level wealth and education, in order to test whether attacks are targeted against areas more proximal to group bases, or against high socioeconomic status communes, regardless of the extent of commune-level preference falsification.

Table 4 presents the results of random effects logistic regression models of commune-month level Islamist violence. The analysis covers the 24-month period following the completion of the surveys (January 2014 to December 2015), which yields 764 observations. The mixed or random effects multilevel set-up accounts for the commune-level experience of an attack via time-varying and time-invariant commune characteristics, as well as a commune-level random intercept. Standard errors are clustered by commune. The results show strong support for H2. Across a series of specifications, commune-level misreporting bias is a positive and statistically significant predictor of subsequent Islamist violence. The bivariate model in Column 1 indicates that a 1 percentage point increase in underreporting results in a .097 increase in the log-odds of a terrorist attack; this indicates that the odds of an attack in a given commune-year increase by a factor of 10 percent for each additional percentage point in underreporting.

The model in Column 2 controls for the absolute level of covert support, and thus provides a critical test regarding the importance of under-reporting *bias* in predicting attacks as opposed to the simple levels of support as gauged by the endorsement experiment. Importantly, the effect of bias remains strong and significant in the positive direction, while the level of covert support is negatively signed and statistically insignificant. This indicates that it is the *discrepancy* between overt and covert support that matters; communes with more "hidden" support are those likely to experience subsequent Islamist attacks. This interpretation is bolstered by an alternative specification of the model that

Table 4. Random effects logistic regressions predicting Islamist attacks.

	(1)	(2)	(3)
Commune-level	8.90***	11.14***	10.40***
Underreporting bias	(2.55)	(4.08)	(3.06)
Covert support		−5.11	
		(6.26)	
Spatial lag			1.98***
			(0.66)
Ramadan			1.23
			(0.79)
Distance to Islamist base			−0.01***
			(0.003)
Commune-level wealth			0.11
			(0.35)
Commune-level education			−1.26**
			(0.54)
Burkina dummy	−0.61	−0.45	−2.09***
	(1.13)	(1.06)	(0.60)
Chad dummy	0.55	0.82	−0.74
	(1.04)	(0.89)	(0.59)
Constant	−5.30***	−4.38***	1.73
	(1.11)	(1.56)	(1.14)
N	840	840	840
McKelvey & Zavoina R2	0.18	0.18	0.38

Standard errors in parentheses *** $p < 0.01$ ** $p < 0.05$.

predicts the likelihood of attacks using commune levels of both overt and covert support. The results, shown in Appendix Table A5, indicate that overt support has a strong and statistically significant negative effect on the likelihood that a commune will experience an attack, while covert support has a strong and significant positive impact. Following the logic outlined above, overt support is known to all, including the government, so higher levels of overt support might encourage governments to allocate security resources accordingly to prevent attacks in those areas; controlling for these levels of open support, greater levels of covert support (i.e., under-reporting bias) lead to an increased commune-level risk of subsequent attacks.

The model in Column 3 shows that the primary independent variable of bias retains its strength and significance when all additional time-varying and time-constant commune-level factors are controlled. Despite the rather small sample size of communes, these results offer consistent support for under-reporting bias as a predictor of subsequent Islamist attacks. Aside from commune-level preference falsification, the spatial lag variable of attacks in the country in the prior month and the distance to the closest Islamist base are significant predictors of subsequent Islamist attacks at the commune-month level.

Finally, the regression results allow us to evaluate the possibility that the relationship between misreporting bias and subsequent attacks is an endogenous function of the type of individuals who reside in particular communities. If communities with wealthier, more educated respondents are both more likely to under-report their true support for extremism and more likely to be targets of extremist attacks, that correlation could explain the apparent relationship in the data. The analyses indicate that commune-level education does predict Islamist attacks, though in a negative direction, casting doubt on the hypothesis that Islamist violence is a function of more westernized or socioeconomically privileged individuals or areas being targeted by Islamist groups. Commune-level wealth does not have a significant effect on subsequent attacks. This indicates that factors other than the commune-level compositional association between under-reporting and socioeconomic status explain the linkage between misreporting bias and the likelihood subsequent terrorist attacks, thus providing support for H3. Mechanisms related to terrorist group secrecy and misallocations of security resources derived from the theoretical discussion would appear to be more plausible explanations.

Figure 1 provides a telling illustration of the main findings. As the figure shows, half of communes under-reported their support for Islamist groups and half over-reported that support. Most importantly, every single attack of a surveyed commune during the period under analysis targeted a commune that downplayed its true support.[62] To be sure, not every commune with an under-reporting bias experienced a terrorist attack, but every terrorist incident occurred in a commune with an under-reporting bias.

Robustness tests and alternative explanations

We subject the results of the analyses to a series of robustness checks. First, we use rare-events logistic regressions in order to predict Islamist violence,[63] which occurred in only two percent of all commune-months included in our sample. The results, shown in Column 2 of Appendix Table A5, indicate that localities which exhibit higher levels of under-reporting bias are more likely to become the targets of Islamist violence, controlling for all the time-varying and stable commune-level variables from Table 4.

Second, we re-estimate the model in Table 4 using an alternative spatial lag variable which weights each commune's value at a given time by its geographical distance from the commune in the country which experienced an attack in the prior month. The results show that commune-level bias again has a strong and significant impact on the propensity of communes to experience subsequent attacks (Column 3 in Appendix Table A5).

Third, we test the relationship between misreporting bias and subsequent attacks using an alternative measure of overt support for violence in the name of religion. In this test, individuals' open support for violence in the name of Islam is gauged by asking them whether they agree or disagree that "Violence in the name of Islam can be justified." We then aggregate this new measure of overt support for religious violence at the commune level and test whether differences between overt and covert support for violence continue to predict attacks in the period following our data collection. Using this alternative measure of social desirability bias, *Commune-Level Under-reporting Bias* remains a near-significant ($p < .10$) predictor of subsequent Islamic attacks (Column 4 in Table A5 in the Appendix).

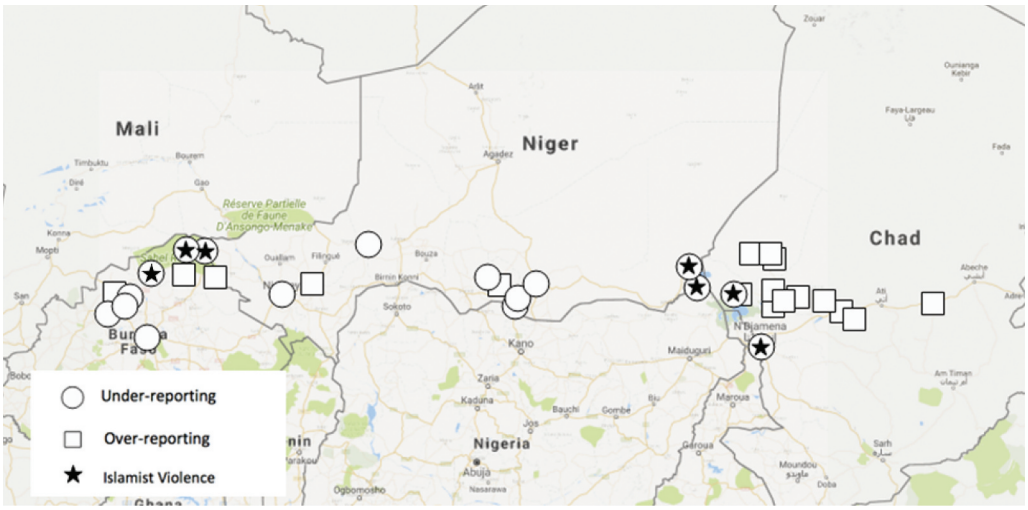

Figure 1. Misreporting biases and subsequent islamist attacks among sampled communes.

Conclusion

This study opens a new avenue of research regarding the effects of misreporting biases in the context of support for violent extremism. Using data collected from nearly 4,000 individuals in three countries in the African Sahel, we find that certain subgroups express overt attitudes regarding support for violent extremism that do not reflect their true levels of support, as gauged using endorsement experimental methods now common in the field.[64] Consistent with previous work, individuals of higher socio-economic status are more likely to under-report their true support for Islamist violence, while lower socioeconomic status individuals are more likely to over-report such support, relative to their true attitudes. The findings reinforce the growing consensus that support for violent extremism is not more prevalent among the impoverished. Once support is gauged using experimental methods that control for preference falsification, we instead find a positive relationship between socioeconomic status and support for extremism. We interpret these results as supporting the notion that lower socioeconomic strata individuals are more vulnerable to extremist violence; they have lower true support for extremism but overstate that support likely due to fears of reprisal by active extremist groups.

The central question of this study is whether the magnitude of misreporting biases is important for reasons beyond the accurate measurement of individual support for violent extremism and its socio-demographic determinants. We show, in what we believe to be the first demonstration of its kind, that the direction and magnitude of under-reporting biases relate in significant ways to a commune's experience with Islamist-based violent attacks. Using commune-level data on attacks gathered monthly over a two-year period following the survey, we find that communes where individuals under-report their true support for violent extremism have a greater probability of experiencing subsequent Islamist attacks, controlling for socio-demographic characteristics of the commune, country-level proximity effects, and other time-varying factors. We interpret these results as indicating that preference falsification regarding support for extremism has significant consequences for where terrorist attacks are likely to occur among the vulnerable societies of the Sahel.

These findings have important theoretical, methodological, and policy implications. First, they indicate that misreporting bias is relevant not only in terms of gauging individuals' actual preferences; it also constitutes a critical aggregate-level phenomenon that has consequences for the strategic decisions of both groups that perpetrate Islamist violence and governments attempting to protect the populace. When under-reporting of true support is high, governments are less able to ascertain security threats, while extremist groups may infer the presence of self-monitoring "true supporters" or quiet abettors on the ground. In those instances, the government may not allocate sufficient resources in terms of protection against Islamist violence, while the risk of an attack itself increases. The greater self-monitoring of wealthier and more educated individuals in hiding their true support thus appears to make their communities more vulnerable to subsequent violence, and the risk that participants and abettors of terrorism strategically monitor those sentiments from nearby further undermines security and peace.

Methodologically, the study supports the increasing priority placed on experimental methods, including endorsement and list experiments, in order to more accurately gauge individuals' true levels of support for extremist violence. As we have noted, however, biases in reporting constitute more than a nuisance or artefact of the interview process that must be corrected for "true attitudes" to be revealed. As such, we recommend that both experimental and overt measures for extremist support be included in future studies when it is feasible to do so. As survey responses appear to be a complex mixture of true attitudes, individual self-monitoring, and dynamic aspects of commune-level security factors, including both types of measures and assessing the discrepancies between them will provide a more comprehensive view of both the attitudinal and security landscapes than either type of measure alone can provide.

The results also suggest that the inclusion of both overt and experimentally-based survey measures can provide policymakers, intelligence services, and international donors with a new tool to combat violent religious and political extremism. Security sector resources are typically allocated to deter

militants based on suspicions of support, gathered through the intelligence sourcing of informant networks and the monitoring of militant locations. Finding areas where support for extremism is hidden would assist authorities in identifying communities that are vulnerable to attacks prior to the onset of violence, and would lead to tactical efficiency gains in efforts to deter militants who seek advantage from information asymmetries. In the same way, assessing the discrepancies between covert and overt support can assist international donors involved in Countering Violent Extremism (CVE) programming to better target their resources.

Future studies might build on this research in a number of ways. We did not explicitly test the potential mechanisms linking reporting bias to subsequent attacks; our goal was instead to demonstrate the practical implications of misreporting bias regarding violent extremism, though we speculate that the outcomes are a function of misallocated security resources and the strategic secrecy of abettors of terrorism. Future work should directly test those claims. Further research might also show how misreporting bias affects these outcomes in contexts outside of the Sahel, and as more communities are affected by terrorist violence, more expansive analyses might overcome some of the data limitations in this study. Finally, we suggest studies that evaluate community-level misreporting over time, and how those tendencies may change in the aftermath of increased terrorist threats.

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Notes on contributors

Steven E. Finkel is the Daniel H. Wallace Professor of Political Science at the University of Pittsburgh. His main areas of interest are in comparative political behavior, democratization, and the evaluation of civic education and countering violent extremism programs in emerging democracies and conflict settings.

John F. McCauley is an Associate Professor of Government and Politics at the University of Maryland, College Park. His research focuses on terrorist attacks and their consequences, ethnic and religious politics, and informal political institutions in Africa.

Michael Neureiter, Ph.D. is a Postdoctoral Researcher in Comparative Political Science at Ludwig-Maximilians-Universität München. His interests include migration and migrant integration, global governance and international organizations, democracy promotion and human rights, public opinion and extremist attitudes, and European politics.

Christopher Belasco is the Data Services Manager for the City of Pittsburgh in the Department of Innovation and Performance, where he manages analytic and data engineering efforts to improve City operations. He is an Adjunct Professor at the Graduate School of Public and International Affairs at the University of Pittsburgh; his interests include governance, democracy promotion, and applied evaluation methods.

ORCID

Steven E. Finkel http://orcid.org/0000-0002-9391-2732
John F. McCauley http://orcid.org/0000-0003-1349-1489
Christopher Belasco http://orcid.org/0000-0002-4083-9025

Notes

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56. Treatment and control groups were nearly perfectly balanced on wealth, education, and employment status (see Appendix Table A1).
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Appendix

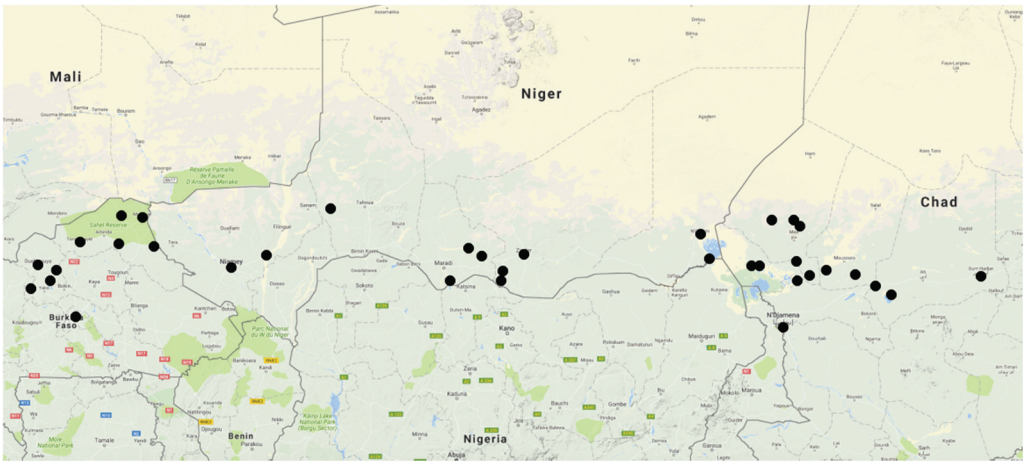

Figure A1. Sampled zones.

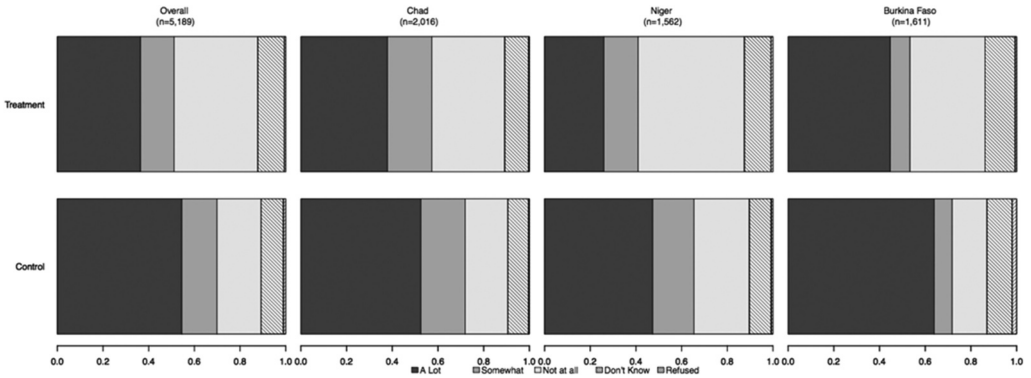

Figure A2. Descriptive plot of the endorsement experiment.

Table A1. Covariate balance summary.

	Weighted difference in means	Weighted variance ratio
Wealth	0.000008	0.935
Education	0.00008	1.053
Employment status	0.00002	1.000

Table A2. Replication of Table 2 with interviewer fixed effects.

	(1)	(2)	(3)
Income*Treatment	−0.13**		
	(0.06)		
Education*Treatment		−0.13**	
		(0.06)	
Employment*Treatment			−0.26
			(0.20)
Income	0.06		
	(0.04)		
Education		0.09**	
		(0.04)	
Employment			0.10
			(0.16)
Treatment	−0.64***	−0.68***	−0.93***
	(0.20)	(0.18)	(0.14)
Interviewer Dummies	Yes	Yes	Yes
N	3,309	3,309	3,283
McKelvey & Zavoina R2	0.88	0.89	0.89

Standard errors in parentheses ***$p < .01$ ** $p < .05$.
Country dummies are included in all models but are not reported in the table for visual clarity.

Table A3. Replication of Table 2 controlling for the presence of others during the interview.

	(1)	(2)	(3)
Income*Treatment	−0.14***		
	(0.04)		
Education*Treatment		−0.11**	
		(0.05)	
Employment*Treatment			−0.10
			(0.17)
Income	0.08***		
	(0.03)		
Education		0.10***	
		(0.03)	
Employment			0.13
			(0.16)
Treatment	−0.46***	−0.55***	−0.78***
	(0.15)	(0.15)	(0.11)
Presence of Others	0.24**	0.24**	0.22**
During Interview	(0.09)	(0.09)	(0.10)
N	3,309	3,309	3,283
McKelvey & Zavoina R2	0.07	0.07	0.06

Standard errors in parentheses *** $p < .01$ ** $p < .05$
Country dummies are included in all models but are not reported in the table for visual clarity.

Table A4. Replication of Table 3 with alternative cut-off points.

		Covert	Overt	Difference
High income = seven or more items	High income	21 percent	12 percent	0.09**
	Low to moderate income	18 percent	24 percent	−0.06***
High income = five or more items	High income	27 percent	16 percent	0.11***
	Low to moderate income	17 percent	25 percent	−0.08***
High income = four or more items	High income	26 percent	17 percent	0.09***
	Low to moderate income	16 percent	26 percent	−0.10***
High level of education = Secondary complete	High level of education	26 percent	20 percent	0.06
	Low to moderate level of education	18 percent	24 percent	−0.06***
High level of education = Primary complete	High level of education	25 percent	22 percent	0.03
	Low to moderate level of education	16 percent	24 percent	−0.08***
High level of education = Some primary	High level of education	24 percent	22 percent	0.02
	Low to moderate level of education	15 percent	25 percent	−0.10***

Standard errors in parentheses *** $p < .01$, ** $p < .05$

Table A5. Logistic regressions predicting Islamist attacks.

	Controlling for overt & covert support (1)	Rare event logistic regression (2)	Alternative spatio-temporal lag (3)	Alternative measure of bias (4)
Commune-level Underreporting bias		8.96*** (3.03)	9.85*** (2.84)	3.80* (2.01)
Covert support	10.47*** (2.93)			
Overt support	−10.04** (4.28)			
Spatial lag	1.98*** (0.64)	1.81*** (0.66)	1.76*** (0.46)	2.00*** (0.67)
Ramadan	1.24 (0.79)	1.17 (0.79)	1.22 (0.75)	1.20 (0.77)
Distance to Islamist Base	−0.01*** (0.004)	−0.01*** (0.003)	−0.01*** (0.004)	−0.01*** (0.004)
Commune-level Wealth	0.10 (0.34)	0.04 (0.34)	0.14 (0.30)	−0.30 (0.40)
Commune-level Education	−1.23** (0.57)	−1.03* (0.53)	−1.08** (0.44)	−0.18 (0.50)
Constant	1.67 (1.01)	1.25 (1.13)	1.69 (1.23)	1.48 (1.13)
N	840	840	840	840
McKelvey & Zavoina R2	0.38		0.37	0.35

Standard errors in parentheses ***$p < .01$ **$p < .05$ *$p < .10$.
Country dummies are included in all models but are not reported in the table for visual clarity.