When Extremists Become Violent: Examining the Association Between Social Control, Social Learning, and Engagement in Violent Extremism

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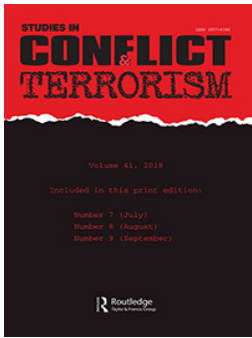University of Maryland, College Park

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When Extremists Become Violent: Examining the Association Between Social Control, Social Learning, and Engagement in Violent Extremism

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ABSTRACT

This research examines the relationship between social control and social learning variables on involvement in violent vs. non-violent extremism. Using data from the Profiles of Individual Radicalization in the United States (PIRUS) database ($n = 1,757$), this study presents a series of logistic regressions. Among radicalized individuals, weaker social control and stronger social learning of violence were associated violent over non-violent behavior. These results hold across all models. Taken together, these findings support the role of control and learning theories in identifying correlates of violent and non-violent extremism and suggest the possibility of reciprocal and interaction effects for future work.

Introduction

On October 27, 2018, shortly after posting an anti-immigrant and anti-Jewish diatribe on a fringe social media network, Robert Bowers entered The Tree of Life Synagogue in Pittsburgh, Pennsylvania opening fire on the congregation with an AR-15, killing eleven.[1] Bowers, 46, was not known to law enforcement, but has since been charged in the most fatal Anti-Semitic attack in the history of the United States.[2] This attack followed in the wake of a mail-bombing campaign targeting current and former political officials, highlighting widespread concerns of domestic extremism.[3] Though terrorism worldwide dropped dramatically between 2014 and 2017, the frequency of extremist incidents in the United States more than doubled in the same period (29 in 2014 to 65 in 2017).[4] Like other focusing events that may catalyze public fear of extremism and spur academic interest in the topic,[5] recent attacks are an uncomfortable reminder that we remain largely unable to distinguish between violent actors and those who engage in other illicit ideologically-motivated acts *ex ante*, despite decades of research and policy designed to counter extremism.[6] Considering this limitation, the United States public and researchers alike have returned to a common refrain; what could cause someone to act so violently, and what could have been done to prevent it?

Since early explanations focusing on individual psychopathology,[7] research has provided a variety of approaches in explaining the phenomenon of violent extremism.

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Unsurprisingly, these approaches range in their scope – from those describing the salient risk factors of individuals as they move into, through, and out of extremism,[8] to others which suggest socializing pressures into extremism.[9] Still other approaches outline the attitudes of constituencies and direct supporters of ideologically motivated behavior.[10] Among these explanations however, little criminological research has been dedicated to developing a robust theoretical foundation for distinguishing among violent and non-violent extremists.

Empirical research has demonstrated that despite media attention on individual events, acts of violent extremism are quite rare.[11] At the individual level, most supporters of extremist organizations do not engage in violent extremism,[12] and in fact research suggests that even among identified members of extremist organizations the majority are not involved in extremist violence.[13] Likewise, among individuals arrested, convicted, and incarcerated between 2001 and 2017 for terrorism-related charges, the majority were found to have engaged in relatively less-serious forms of behavior including fraud, property destruction, and providing material support for terrorism.[14] Thus, it is important to explore what distinguishes the extremists who engage in violence from their non-violent counterparts.

Gill and Young suggest that this heterogeneity may stem from the roles within extremist organizations. [15] While members who participate as foot soldiers or military leadership may be more likely to engage in violence, this is not the case for ideologues, skilled laborers (e.g. bomb makers) and fund-raisers who would be placing themselves at unnecessary risk of arrest or injury by engaging in violence, sacrificing their value to the organization. Additionally, the role of each individual within the organization is likely a function of a variety of forces including self-selection and skills, organizational needs, as well as the size and structure of the group.[16]

Alternatively, risk factor approaches suggest that political extremists who engage in violence could differ systematically from those who choose to abstain. While some risk-factor approaches are far more nuanced than others,[17] most forego discussion of the mechanisms which inform involvement in extremism and violence. Thus, while risk factor approaches are a valuable descriptive step by delineating common characteristics among a population of interest, theory can aid in filling these gaps, addressing possible mechanisms, and suggesting points of intervention.

Theories of crime and deviance in criminology are a logical fit to this problem, and provide a framework for understanding violent and non-violent extremism.[18] This study aims to contribute to the empirical literature by exploring the ability of social control and social learning frameworks to describe involvement in ideologically motivated violent and non-violent behavior, among a sample of known extremists. These questions are addressed quantitatively using the Profiles in Individual Radicalization in the United States (PIRUS) dataset recently published by the National Consortium for the Study of Terrorism and Responses to Terrorism (START). The PIRUS dataset is a cross-sectional, individual-level open-source, dataset of extremists who radicalized primarily in the United States and went on to engage in either violent or non-violent ideologically motivated acts. For the purposes of the present study, I define extremism as a criminal act in order to achieve a political, social, economic, religious, or other distinct ideological goal. Violent extremism, the focus of this study, is a specific subset of extremism wherein the criminal act is clearly intended to, or actually results in casualties.[19]

Theories Explaining Violence by Extremists

Engagement in violent extremism is frequently seen as a multi-stage process.[20] In fact, while the literature tends to focus on risk factors, the importance of these risk factors waxes and wanes across levels of involvement.[21] As a result, the risk factors for initial involvement may not be as relevant for investigators or the purposes of intervention once extremists are considering participation in violence.[22] Thus, it is important to consider processes that may permeate stages of involvement, such as recursive or developmental components as discussed in social control and social learning theories of crime.

Horgan presents a three-stage process model of radicalization wherein terrorism as a more global construct is broken down into the phases of "'becoming' a terrorist, 'being' a terrorist... and 'disengaging from' terrorism".[23] This model highlights the importance of flexibility in identifying the motivational, structural, and social components that may encourage, sustain, and inhibit violent extremism across all three stages. Relatedly, McCauley and Moskalenko propose a model of involvement in extremist organizations which suggests multiple tiers of engagement,[24] ranging from neutral parties to those supporting extremist groups, albeit indirectly, and finally those few individuals who are actively involved in criminal behavior. Together, these perspectives suggest that while some factors overlap across the stages of involvement, even among extremist group members, participation in violent behavior among members is not certain and requires further examination.[25]

Others have sought to explain the forces which predispose individuals toward extremist violence using a psychological perspective. Kruglanski and colleagues argue that involvement in extremism may stem from a "fundamental desire to matter, to be someone, to have respect...",[26] and that threats to identity and significance, as well as opportunities to achieve possible future significance, can motivate extremist behavior. Moreover, Jasko and colleagues find evidence supporting Kruglanski et al.'s quest for significance theory using the PIRUS data,[27] identifying recent losses of social significance as associated with involvement in violent, over non-violent extremist behavior.

Finally, LaFree et al. introduce PIRUS as a recently published individual-level dataset on extremism to a criminological audience and demonstrate the utility in criminological explanations of participation in violent extremism.[28] Specifically, they test a set of 11 hypotheses across learning, control, strain, and psychological perspectives as well as a variety of known correlates of criminal behavior. LaFree and colleagues find evidence that employment, peers, mental illness, and criminal history, as well as a variety of atheoretical control variables, are associated with violent radicalization. Through their exploratory approach, LaFree and colleagues present a series of interesting and insightful analyses which highlight many important questions to further this line of work.[29] Concluding their piece, the authors call for research to assess how specific criminological theories fare when describing involvement in violent and non-violent extremism. In this study, I answer this call through an exploration of the strengths and limitations of social control and social learning frameworks in explaining violent as compared to non-violent extremism using a recently updated and expanded version of the PIRUS dataset.

Social Control

Social control theories examine the forces which restrain individuals from involvement in crime and deviance. Distinct from theories of deterrence which emphasizes formal social control and state endorsed sanctions,[30] the control perspective emphasizes how institutions and individuals constrain behavior by providing informal sanctions in response to antisocial or non-normative behavior.[31] Emblematic of the control perspective, Hirschi focuses on the bonds which are formed between individuals and conventional society and social norms.[32] Briefly, Hirschi outlines four bonds to socializing institutions as attachment, involvement, commitment, and belief. If an individual has a weak bond across any of these dimensions, they likely have little inhibition from deviance or crime, whereas stronger bonds indicate stronger adherence to social norms. Stated another way, Sampson and Laub describe the influence of these bonds through the lens of social investment in institutions.[33] While attachment speaks to emotional connection to the family and proximate prosocial others, involvement and commitment reflect investment in other institutions such as work, school, and broadly, a prosocial future self. Additionally, belief reflects social investment in the moral code and structure of society.

More recently, the social control perspective has been applied to adult contexts and populations as the age-graded theory of informal social control.[34] In this life-course adaptation, Sampson and Laub highlight the importance of stable patterns of work and suggest that military involvement and marriage represent adult institutions which support conformity to prosocial norms.[35] Building upon this work, Bersani and Doherty examine marriage more deeply and find that under certain circumstances divorce can be a criminogenic event above and beyond simply not having been married.[36] Taken together, these early and later life bonds represent a series of possible costs to engaging in antisocial behavior. Among radicalized individuals, this remains the case, and while strong institutional bonds are unlikely, I anticipate that only those with the weakest informal social control would engage in ideologically motivated violence despite the squandered social costs.

Social Learning

Social Learning Theory (SLT) in its modern form was introduced by Akers and colleagues and represents a competing theoretical explanation for involvement in extremist violence.[37] Dating back to differential association under Sutherland and Cressey,[38] learning theories contend that the same processes govern the learning of both prosocial and criminal behavior. The central mechanism of SLT focuses on understanding how patterns of interaction can model, reinforce, or punish behavior and thus influence the probability that an individual learns and engages in the behavior over time Akers and colleagues outline four central constructs of SLT: *differential associations* with peers, the formation of *definitions* favorable or unfavorable to breaking the law, the *imitation* of observed behavior, and *differential reinforcement* of behavior in various contexts.[39] With each construct emerging from a distinct philosophy of learning, Akers joined the works of Sutherland and Cressey,[40] Bandura,[41] Skinner,[42] and Sykes and Matza,[43] to

describe how individuals interpret and integrate stimuli that may lead to delinquency or crime. Summarized briefly in the context of violence, Akers and Silverman explain:

> The probability that persons will commit acts of violence is increased when they differentially associate directly or indirectly with others who commit violent behavior and espouse definitions favorable to it (differential association), are relatively more exposed to in-person or symbolically through media to *salient models of violence* (imitation), *define it as desirable or justified* (definitions) in a situation *discriminative* for the behavior, and have received in the past and/or anticipate in the current or future situation relatively *greater reward* … and *less punishment* for the behavior (differential reinforcement). [44]

Thus, according to Akers and Silverman violence itself must be learned.[45] While some extremists participate in violence, research has shown that many others do not,[46] and therefore social learning theory – as applied to violence and here, violent extremism – should distinguish between extremists who participate in violence from those who do not. Simply put, the social learning of violence itself should be more common among violent extremists.

Theoretical Model

Applying social control constructs to the context of involvement in ideologically motivated extremism, individual belief structures have been found to be fundamentally important.[47] Hirschi described belief as the individual's investment in the moral validity of shared values and norms in a society;[48] perhaps the strongest social norm in conventional society is the importance of abstaining from violence.[49] To this end, among those who hold deep grievances with society, individuals truly unburdened from social controls would be most likely to violate this norm in pursuit of a violent ideological cause. Contrastingly, those who saw some possibility of redemption for the society writ large would likely be more restrained from violence. As such, each individual's degree of belief in conventional vs. extremist normative structures should be key in distinguishing violent from non-violent extremists.

Additionally, consistent with prior research I expect adult prosocial bonds will be important among extremists in restraining violent behavior.[50] More broadly, weaker bonds to conventional society may allow radicalized individuals to be less restrained from engaging in acts of violence.

Like social control, very few studies have examined social learning theory empirically in the literature on extremism.[51] However, support for Akers and Silverman's discussion of the learning of violence emerges in examining the narrative works of Marc Sageman and Aidan Kirby on group relations within Islamist cells.[52] Among extremists, being exposed to individuals who define violence as a favorable or justifiable course of action should be associated with the use of violence. Further, exposure to those who systematically model violence under specific circumstances and reward the use of violence should predict violence. Thus, evidence of the social learning of violence or violent extremism, should be predictive of violent behavior whereas the absence of such indicators should more strongly predict non-violent extremism.

While the nature of relationships among individuals, and between individuals, groups, and institutions is complex, each theory may hold independent explanatory power when differentiating involvement in violence over non-violence among extremists. Focusing

on these theoretical explanations of involvement in violent extremism, the following hypotheses emerge:

H1: Indicators of stronger *informal social control* will be negatively related to violent extremism as compared to non-violent extremism.

H2: Indicators of the *social learning* of violence will be positively related to violent extremism, as compared to non-violent extremism.

Materials and Methods

Data – Profiles of Individual Radicalization in the United States (PIRUS)

To investigate these hypotheses, I used PIRUS, a cross-sectional dataset developed by the National Consortium for the Study of Terrorism and Responses to Terrorism (START).[53] PIRUS includes data on individuals representing Far Right, Far Left, Islamist, and Single Issue ideologies who radicalized primarily within the United States and have been linked to an ideologically motivated violent or non-violent crime. The PIRUS dataset, while not alone in examining the phenomenon, is best suited for examining theoretical predictors of violent vs. non-violent behavior due to the individual level focus and emphasis on precursors to ideologically motivated behavior.

Like the earlier iteration of the dataset presented in LaFree et al.,[54] these data were populated using a variety of publicly available sources including newspaper articles, websites secondary datasets, and more.[55] To be included in PIRUS each individual must meet at least one of the following five criteria:

1. The individual was arrested;
2. The individual was indicted of a crime;
3. The individual was killed because of his or her ideological activities;
4. The individual is/was a member of a designated terrorist organization; or
5. The individual was associated with an extremist organization whose leader(s) or founder(s) has/have been indicted of an ideologically motivated offense.

In addition to meeting one of the above criteria, each individual must have been radicalized in the United States, have espoused (or currently espouse) ideological motives, and show evidence of a link between their behaviors and the ideological motive that they espouse. After an individual had been determined to meet the inclusion criteria, trained research assistants coded them on various demographic, social, and individual attributes. This resulted in a sample of 1,867 individuals who met the inclusion criteria for the dataset. Individuals with missing values for age are omitted from these analyses resulting in a final analytic sample of 1,757.

Outcome Measure: Violence

The dependent variable of interest in this study is a dichotomous measure representing whether an individual actively participated in an ideologically motivated act that resulted in casualties or was clearly intended to result in injury or death but failed.

Individuals coded as "0" for *Violent* represent cases of non-violent ideologically motivated extremism including those who engaged in the destruction of property, vandalism, possession of illegal weapons without operational plans for violence, or engaging in ideologically motivated tax fraud or filing false liens.

Social Control Variables

Eleven (11) variables are included to estimate the influence of social control on individuals within the dataset. For all dichotomous/indicator variables, a "1" reflects documented evidence of the named construct whereas a "0" indicates its absence.

Four variables reflect the affective bond of attachment. The *Abuse Child* variable is a dichotomous measure signifying whether the individual was abused by a family member as a child. While an overall rare occurrence (see Table 1), the presence of abuse by a family member represents a clear manifestation of weak attachment which is known to have long-term consequences in a variety of social and relational domains.[56] *Married* and *Divorced* are also included as dichotomous measures of adult bonds of attachment. Respectively, these indicators may signal evidence of a strong bond and evidence of a ruptured bond of attachment.[57] *Close Family* is an indicator of involvement with family members, attending family gatherings on a regular basis, or celebrating holidays with their family, indicating stronger attachments.

Next, I include five variables to indicate the presence of bonds of involvement and commitment. The behavioral manifestations of these constructs – particularly in adulthood – support a conceptual grouping in this context. First, *Work History* is included as an ordinal reflection of the individual's employment prior to their entry into the dataset. This variable ranges from long-term unemployed (0) to underemployed (1), serially employed (2), and regularly employed (3). More stable employment reflects a stronger social investment in the institution of work, which forms the informal social control in the bonds of commitment and involvement among adults.[58]

Second, *Unstructured Time* is a dichotomous indicator of individuals who are not thoroughly involved with prosocial activities.[59] As an indicator of involvement, this is exemplified in the PIRUS codebook as an "unemployed person who is not actively seeking employment, is not a student, and is not engaged in the community".[60] Like Osgood and Anderson, I expect the presence of unstructured time to indicate a weak bond of involvement.

As evidence of commitment to prosocial futures, I measure if the individual was a *Student* at the time of their radicalization of beliefs or behaviors.[61] Likewise, consistent with Sampson and Laub,[62] I measured each individual's involvement in the United States *Military* to demonstrate the influence of adult prosocial bonds. This measure is coded to indicate if the individual was on active duty at the time of radicalization (2), if they were ever (1) in the US military, but inactive at the time of their radicalization, or never in the US military (0) to reflect variation in daily involvement in structured tasks.

Finally, I measured *Aspirations* as indicative of the construct of commitment. The absence of strong commitment is a commonly cited strong predictor of later criminal behavior, therefore I measure if the individual achieved a set of specific career or educational aspirations prior to their extremist behavior (1), as contrasted with those who

Table 1. Descriptive Statistics and % Missingness

Variable	N	Mean	Std. Dev.	Min	Max	% Missing
Violent	1757	0.60		0	1	0.00
Abuse Child	1757	0.02		0	1	0.00
Married	1065	0.40		0	1	39.39
Divorced	1065	0.09		0	1	39.39
Close Family	480	0.82		0	1	72.68
Work History	720	2.41	0.94	0	3	59.02
Unstructured Time	728	0.27		0	1	58.57
Student	1026	0.25		0	1	41.61
Military	1164	0.20	0.48	0	2	33.75
Aspirations	310	0.20		0	1	82.36
Angry US	1077	0.77		0	1	38.70
Radical Beliefs	1587	3.87	1.53	0	5	9.68
Group Membership	1757	0.74		0	1	0.00
Actively Recruited	829	0.28		0	1	52.82
Actively Connect	774	0.38		0	1	55.95
Clique Radicalize	955	0.57	0.73	0	2	45.65
Gang	1757	0.05		0	1	0.00
Beliefs Trajectory	728	0.31		0	1	58.57
Behaviors Trajectory	792	0.40		0	1	54.92
Male	1757	0.90		0	1	0.00
Age	1757	33.59	12.96	15	88	0.00
Age squared	1757	1296.04	1060.46	225	7744	0.00
Previous Violence	985	0.19		0	1	43.94
Previous Non-Violent	985	0.20		0	1	43.94
Psychological	1757	0.11		0	1	0.00
Exposure 1950s	1757	0.01		0	1	0.00
Exposure 1960s	1757	0.06		0	1	0.00
Exposure 1970s	1757	0.10		0	1	0.00
Exposure 1980s	1757	0.13		0	1	0.00
Exposure 1990s	1757	0.16		0	1	0.00
Exposure 2000s	1757	0.26		0	1	0.00
Exposure 2010s	1757	0.28		0	1	0.00
Radicalization Islamist	1757	0.25		0	1	0.00
Radicalization Far Right	1757	0.40		0	1	0.00
Radicalization Far Left	1757	0.17		0	1	0.00
Radicalization Single Issue	1757	0.18		0	1	0.00

NOTE: % Missing refers to the proportion of the observations which were missing.
Abbreviations: N = sample size; Std. Dev. = standard deviation.

either tried, and failed to achieve them, had clear aspirations, but did not attempt to achieve them, or had no evidence of aspirations (0).

Assessing the magnitude of the social bond of belief in conventional norms, I included an indicator of explicit overt signs of *Anger* with the US society, social norms, and mores, as well as an ordinal assessment of their *Radical Beliefs*. Radical beliefs assess the maximum extent of radicalization apparent in the individual's beliefs, from holding an ideological system but no evidence of belief in extremist versions of ideology (0) to a deep commitment to radical ideological beliefs (5). Intermediate values reflect evidence that the individual (1) was exposed to a radical ideology; (2) pursued further information about a radical ideology; (3) attained full knowledge of the tenets of a radical ideology; and (4) shares many of the beliefs of the radical ideology.

Social Learning Variables

The seven (7) indicators of the social learning of violence include variables representing the constructs of differential association, imitation, differential reinforcement, and

definitions.[63] These responses, when aggregated, reflect the cumulative learning processes toward violence, which I hypothesize will contribute to an individual's engagement in violent ideologically motivated extremist behaviors.

First, the *Group Membership* variable, as a proxy for the differential association process, is included, indicating if the individual was a member of a formal or informal extremist group. Members of above-ground political movements who did not associate with other extremists are not considered as having differentially associated with those who would contribute to the learning of violent extremist behaviors.

Next, I measure whether the individual was *Actively Recruited* into an extremist movement. This includes individuals ranging from current associates or members of groups, to family members, friends, or others who may serve as a link to the extremist movement. This measure perhaps most directly approximates the social learning process, wherein the differential association with those who are supportive of violent extremism are providing definitions and reinforcement for involvement. I also include the *Actively Connect* variable to dichotomously measure if the individual reached out to an extremist group prior to engaging in ideologically motivated radical behaviors. Of note, these two measures are not mutually exclusive, indeed their influence should be cumulative insofar as actively reaching out to an actively violent extremist group prior to engaging in behavior suggests the presence of longer-standing definitions supportive of violence.

Turning to group processes which produce extremist beliefs, I included a measure of whether or not the individual was a member of a close-knit group of intimate peers who may have contributed to the learning process of violent extremism. This *Clique Radicalize* measure was coded ordinally to reflect the following circumstances: no clique membership (0), radicalization began prior to clique membership (1), onset of radicalization which coincides with clique membership (2). This reflects the constructs of differential association, imitation, and differential reinforcement or simply, the exposure to a close-knit group of intimate peers as they contribute to the learning process of radicalization.

A *Gang* affiliation descriptor was included as a dichotomous measure assessing if there is evidence that the individual was involved in a street gang, an organized criminal group, or both prior to their extremist behavior, or not. Gang membership, as demonstrated by Winfree, Backstrom, & Mays,[64] would be indicative of the entire social learning process at play – from differential association with violent others, to imitation and reinforcement, and definitions unfavorable to obeying the law.

Finally, I included measures of the trajectory of each individual's *Beliefs* and *Behaviors*. This reflects whether the individual's radicalization occurred gradually, over an extended period of time as would be indicative of a more drawn-out learning process (1), or if their radicalization was driven forward by key events or moments (0). These each reflect the development of definitions and reinforcement over time – a dimension of the learning processes.

Demographic and Atheoretical Control Variables

Other explanatory variables included here are drawn from LaFree et al.,[65] and include demographic indicators including the individual's age (and age squared) and sex (male = 1), [66]

previous non-ideological criminal history, the presence of psychological disorders, as well as the decade of extremist behavior and the ideological milieu that the individual espoused.[67]

Missingness

Table 1 presents descriptive statistics for the variables in the following analyses, including the proportion of missing values for each of the theoretical and control indicators. There was a great deal of variation in the proportion of missingness among the items included, from fully complete information (e.g. violent, gender, ideology, exposure decade, age) to one indicator missing in over 80% of the observations (Aspirations). As noted in LaFree et al.,[68] this was not unanticipated as databases which use open-source information regularly exhibit a substantial amount of missingness. While a variety of missing data strategies are discussed within the empirical literature using open-source datasets,[69] I applied multivariate imputation using chained equations (MICE) to PIRUS and estimated the following models using pooled datasets.

In MICE, a series of regression models are estimated for each variable, with missing data being modeled conditional on the values of known variables in the dataset.[70] This process is repeated iteratively until convergence, or stable estimates of the distribution of the parameters governing the imputation process, is achieved and a final imputed dataset is formed. Once this procedure has been completed, the entire imputation process is repeated until sufficient datasets have been formed to properly account for the imputed nature of these new values and their respective standard errors.[71] Here, I imputed 50 datasets and performed the multivariate regressions on the pooled datasets in order to preserve appropriate levels of uncertainty.[72]

Analyses

Analyses began with a descriptive examination of the theoretical and control variables including bivariate correlations with the outcome variable. Next, a series of multivariate logistic regression models were estimated to address each of the hypotheses. I estimated three models shown below:

$$\hat{P}(Violent = 1) = \frac{\exp(\beta_0 + \beta_1 \textbf{\textit{SocialControl}} + \beta_2 \textbf{\textit{Controls}})}{1 + \exp(\beta_0 + \beta_1 \textbf{\textit{SocialControl}} + \beta_2 \textbf{\textit{Controls}})} \quad (1)$$

$$\hat{P}(Violent = 1) = \frac{\exp(\beta_3 + \beta_4 \textbf{\textit{SocialControl}} + \beta_5 \textbf{\textit{Controls}})}{1 + \exp(\beta_3 + \beta_4 \textbf{\textit{SocialControl}} + \beta_5 \textbf{\textit{Controls}})} \quad (2)$$

$$\hat{P}(Violent = 1) = \frac{\exp(\beta_6 + \beta_7 \textbf{\textit{SocialControl}} + \beta_8 \textbf{\textit{SocialLearning}} + \beta_9 \textbf{\textit{Controls}})}{1 + \exp(\beta_6 + \beta_7 \textbf{\textit{SocialControl}} + \beta_8 \textbf{\textit{SocialLearning}} + \beta_9 \textbf{\textit{Controls}})}$$
$$(3)$$

In equation 1, I regressed the probability of engaging in violent extremist behavior on a vector of theoretical indicators for social control. In equation 2, violent behavior was regressed on a vector of indicators of social learning. Finally, I modeled both vectors of social control and social learning indicators in order to control for the influence of competing perspectives in equation 3.

Table 2. Bivariate Chi Square Associations

Variable	χ^2	Direction
Social Control		
Abuse Child	0.327	
Married	16.891**	–
Divorced	0.005	
Close Family	0.860	
Work History	27.554**	–
Unstructured Time	13.166**	+
Student	3.206†	–
Military	2.051	
Aspirations	20.489**	–
Angry US	1.728	
Radical Beliefs	15.584**	+
Social Learning		
Group Membership	1.830	
Actively Recruited	7.621**	+
Actively Connect	1.365	
Clique Radicalize	8.394*	+
Gang	11.179**	+
Beliefs Trajectory	2.031	
Behaviors Trajectory	4.937*	+

NOTE:
$†p < .10$; $*p < .05$; $**p < .01$
Abbreviations: χ^2 = Chi Square test statistic

Results

First, I present chi-squared associations between each set of independent variables and engaging in violence in Table 2.[73] In this preliminary exploration, I found significant relationships at the bivariate level between 9 of the 18 indicators and participation in violent extremism. The five indicators of social control associated with violent behavior were Married, Work History, Unstructured Time, Aspirations, and Radical Beliefs. Of these associations, all were observed to be in the predicted direction, with evidence of stronger prosocial bonds to society being more common among those who engaged in violent behavior.

Four indicators of social learning were also found to be significantly associated with involvement in violent over non-violent behavior at the bivariate level. These included Actively Recruited, Clique Radicalize, Gang, and Behaviors. Again, all four of these associations were observed in the predicted direction. In sum, the bivariate associations in Table 2 indicated that fully half of the identified indicators of social control and social learning were associated with engagement in violence among radicalized individuals.

Using the pooled 50 datasets generated through the MICE procedure, I next estimate Equations 1-3 in order to assess the multivariate relationships, including known controls.[74] Table 3 presents the odds ratio-transformed results of these analyses, with column one reflecting equation 1, column two reflecting equation 2, and column three reflecting equation 3. As noted, all models include the full set of control variables, the coefficients of which are available upon request.

Social Control

I found mixed support of the social control framework for explaining violence among radicalized individuals. In models 1 and 3, I observed a significant and negative

Table 3. Odds Ratio Transformed Multivariate Logistic Regression Models

Variable Name	Model 1		Model 2		Model 3	
	OR	SE	OR	SE	OR	SE
Social Control						
Abuse Child	0.901	0.345			0.898	0.359
Married	0.737*	0.110			0.709*	0.108
Divorced	0.830	0.195			0.843	0.201
Close Family	0.944	0.192			0.965	0.196
Work History	0.868	0.080			0.868	0.080
Unstructured Time	0.914	0.179			0.960	0.191
Student	0.768	0.129			0.751†	0.130
Military	1.028	0.138			1.051	0.143
Aspirations	0.917	0.152			0.899	0.153
Angry US	1.300	0.210			1.292	0.211
Radical Beliefs	1.116**	0.045			1.125**	0.047
Social Learning						
Group Membership			1.317†	0.183	1.333*	0.189
Actively Recruited			1.122	0.196	1.193	0.214
Actively Connect			0.982	0.144	0.911	0.145
Clique Radicalize			1.093	0.120	1.112	0.125
Gang Membership			1.773*	0.409	1.753*	0.408
Beliefs Trajectory			1.074	0.189	1.074	0.193
Behaviors Trajectory			1.095	0.173	1.081	0.177
F Statistic	7.34**		8.77**		5.94**	

NOTE: n = 1,757 for all models. Control variables in all models include: Male; Age, Age^2; Previous Violent Criminal History, Previous Non-violent Criminal History; Exposure Decade 1950s – 2010s; Psychological; Radicalization Islamist, Far Right, and Far Left. Omitted category: Single or widowed, Female, single issue extremists with no criminal history and no psychological disorder whose exposure occurred in the 2000s. The F Statistic provided serves as an indicator of model fit relative to each specification.
ABBREVIATIONS: OR = Odds ratio transformed multivariate logit estimate; SE = robust standard error; n = sample size.
†$p < .10$; *$p < .05$; **$p < .01$ (using two-tailed significance test).

relationship between being married and engaging in violent ideologically motivated behavior. Additionally, having a more developed set of radical beliefs – indicative of a weak belief in the moral authority and rightness of prosocial institutions – was significantly related to involvement in violent ideologically motivated behavior. Indeed, this relationship appeared somewhat more pronounced in the final model, supporting Hypothesis 1. Finally, in model 3 I found the indicator of *Student* to be marginally significant, suggesting possible evidence of commitment and involvement as important in restraining radicalized individuals from violence. Interestingly, no other indicators of social control were found to be significantly associated with violence among extremists. This is particularly surprising for the Work History, Unstructured Time, and Aspirations measures which had been significant at the bivariate level (Table 2).[75]

Social Learning

Turning to indicators of social learning, I found mixed support for Hypothesis 2. Among the learning indicators presented here, Table 3 shows gang membership as significantly and positively associated with violence among extremists. Simply put, controlling for all else, having been involved in an informal street or organized criminal gang (or both) was associated with a higher probability of having been involved in violent behavior among extremists. Additionally, extremist group membership was found to be

only marginally positively related to violence. These findings remained robust when controlling for social control indicators, providing support for Hypothesis 2. Again, it is curious that group membership was not found to be significantly associated at the bivariate level (Table 2), and that three of the indicators significantly associated with violence in Table 2 (Actively Recruited, Clique Radicalize, and Behaviors Trajectory) were no longer significant in the multivariate model.

Control Variables

I also observed strong associations between the control variables and the outcome (Violent) across the models. Briefly, controlling for all else, males were more likely to engage in violence, as were younger individuals, those with a criminal record including violence, and those who had an identified psychological disorder. Across the decades studied, the omitted category was the 2000's, and all periods but the 1950's and 1990's were found to be significantly associated with violence among the radicalized individuals. Finally, as contrasted with extremists who acted based upon a single political issue, in all models Islamists and Far Right extremists were found to be significantly more likely to engage in violence, whereas Far Left extremists were less likely. These findings were generally consistent with those described by LaFree and colleagues.[76]

Discussion

This paper presents additional evidence for control and learning frameworks in distinguishing ideologically motivated extremists who engage in violent extremism from their non-violent peers. The above findings also suggest that there remains much to learn from applying criminological theory to violent extremism. In this study, I apply learning and control perspectives to the use of violence among a sample of 1,757 domestic extremists spanning four ideologies, heeding calls of Akers and Silverman,[77] as well as LaFree and colleagues.[78] Due to an ongoing need for empirical work on violent extremism among radicalized individuals, particularly among policymakers who must prioritize high-risk cases, this work provides a valuable contribution through developing social control and social learning frameworks.

These findings provide a number of distinguishing factors between violent and non-violent domestic extremists. Social control theory highlights the importance of connections to prosocial institutions as insulating individuals from their criminal impulses. Here, I find a significant and negative association between marriage and extremist violence among radicalized individuals – suggesting support for the control perspective as articulated by Sampson and Laub.[79] As the mean age of individuals in the sample was 33, adult social bonds such as marriage may be particularly important in restraining violence among radicalized individuals.

Additionally, I observe a positive association between having a weaker bond of belief, operationalized as having a more developed set of radical beliefs, and the probability of violence. This finding appears to be consistent in the body of research on extremism as the presence and strength of belief structure is a central component of the quest for significance theory as described in Kruglanski et al. and tested by Jasko and colleagues.[80] Third, my

analyses reveal a link between student status and the probability of involvement in violent extremism among radicalized individuals. The purpose of pursuing advanced education is often a desired prosocial future outcome; similarly, advanced education is often a substantial time commitment. Thus, student status (especially among adults in the sample) is a salient representation of social investment in one's future, as well as the bonds of involvement and commitment. This relationship is not surprising then since the commission of violent extremist behavior, however ideologically motivated, is firmly sanctioned by the state and would squander many opportunities afforded by advanced educational aims. Curiously, I found no evidence of an association between divorce and violence. While this seems inconsistent with Bersani and Doherty,[81] the PIRUS data do not speak to the duration of marriage or the time-lag since a divorce – two factors found to be important in distinguishing the criminogenic nature of this event.

Social learning theory focuses on the socialization process, and the agents of learning with whom one differentially associates. In my analyses, I found consistent evidence of a relationship between gang membership and engagement in violent extremism among radicalized individuals. This finding reflects on the comparative analyses in Pyrooz et al.,[82] and suggests that socialization into antisocial groups which encourage the adoption of violent norms (such as street or organized criminal gangs) may predispose individuals toward violent behavior. My findings also suggest a positive relationship between group membership and engagement in violence. Again, this appears to be consistent with some prior work on crime in general,[83] as well as specifically on extremism – emphasizing the importance of understanding group processes which may produce more serious forms of criminal behavior. [84] Interestingly, this association became particularly pronounced when accounting for social control indicators in model 3 (see Table 3).

Taken together, the support for both hypotheses suggests the possibility of a mutually reinforcing set of factors which produce extremist violence. As these findings support both learning and control frameworks, a theoretically exclusive approach would appear to be inadequate in explaining extremist violence. Indeed, the variety of indicators and constructs supported suggest the possibility that other theoretical structures may be more appropriate. This is not a novel consideration for involvement in organized criminal groups however. Howell and Egley apply Thornberry's interactional theory to highlight the cumulative exacerbating factors which may produce pathways toward gang involvement.[85] Taking a page from this, I suggest that these findings may indicate that a theoretically integrated approach is more appropriate for understanding violent behavior among radicalized individuals.

Unlike prior research I did not find stable employment to be an insulating factor,[86] but rather to have a null relationship with violence. Moreover, there was no evidence to suggest either a positive or negative relationship between military experience and violence. Likewise for indicators of social learning, I did not find evidence that radicalizing alongside peers (Clique Radicalize) was associated with engagement in violent extremism among the sample.[87] In sum, the divergent findings here demonstrate the importance of focused assessments of understudied phenomena.

Next, it is important to note several key limitations of this study, largely driven by the data available for analysis. As noted in other works using PIRUS,[88] the

interpretation of findings ought to be characterized by caution due to missing data. This is particularly the case since there is no analytic method of establishing that the assumption of missingness at random is satisfied.[89] By design, the use of open-source data on violent extremism (such as PIRUS) focuses on what news media and other official outlets believe to be pertinent in terms of events and details. Accordingly, the most frequently available data on the individuals will likely be related to the extremist acts, or when details are particularly shocking. Due to journalistic bias toward more thorough reporting on dramatic cases, when a violent act was performed it is more likely data were not missing, whereas in incidents when non-violent actions were undertaken, there would be less focus on antecedent details.

Similarly, before the advent of mass media on the internet, the availability of sources is limited, biasing conclusions about these processes and individuals toward those who were active in more recent years. Finally, since PIRUS only includes domestic extremists in the United States, these findings may not extend to individuals radicalized outside of the US, or those who explore an ideological belief system but do not engage in violent or non-violent behavior. Conservatively, these findings should not be generalized outside of those who meet the inclusion criteria for PIRUS.

Bearing these cautions in mind however, the PIRUS data are the first of their kind to report such granular data on a radicalized set of individuals. Indeed, the ability to earnestly examine the factors that may precede violent and non-violent extremism, and the ability to explore theoretical frameworks for this phenomenon is a substantial step forward in the field and in producing actionable solutions. Moreover, these data allow a deep dive into the tail of the distribution of criminal behavior. While there are clear concerns regarding inference, and the likelihood of omitted variable bias is high, my analyses address the challenges presented by a sparse dataset, highlight the value of theoretically grounded empirical research, and suggest interesting future avenues of research.

It is also prudent to consider limitations to the theoretical frameworks applied here within the context of describing extremism. First, by design social control theory is uninterested in commenting on the motivational factors of involvement in violent extremism, or crime in general.[90] Likewise, since research has found that mechanisms of informal social control are unable to explain the relationship between perceived racial discrimination and delinquency,[91] future work should explore these factors which undoubtedly merit consideration in the context of violent and non-violent extremism. Turning to adapting the framework of social learning to describe involvement in violent extremism, it is unclear how the theory would describe the importance of normative cultural values of violence or non-violence. While most states celebrate a culture of non-violence, it is pertinent to note the impact of unique cultural normative views and experiences. Most notably here, when compared with similar western democracies, the United States of American experiences substantially higher rates of violent crime.[92] Accordingly, habituation to violence and the formation of definitions supportive of violence may be facilitated through means not examined here. Finally, as both of the theoretical frameworks employed here focus largely on the individual as the unit of analysis, it is important to note that research on terrorism, and crime in general, has identified important sources of structural and geographic variation that remain unexamined in these analyses.[93]

With these caveats in mind, this study has brought additional focus to the application of criminological theory in studying ideologically-motivated extremism. Taken broadly, these findings support the importance of adult social bonds in distinguishing violent and non-violent extremism. This extends the scope and importance of informal social control in restraining extremist individuals from engaging in of serious and violent criminal behavior.

Regarding social learning, this study provides additional support to the importance of disentangling group processes as well as an impetus for integrating the extant literature on gang involvement and violence. As the individuals in PIRUS identified as gang members are, on average, well past the typical age of desistance from gangs,[94] it is likely that many had exited the organization.[95] The findings presented here then call into question the permanence of desistence and group exit for gang members, as it seems that they may remain susceptible to other criminal group involvement.[96]

This study also provides insight for policy related to targeting Countering Violent Extremism (CVE) and Preventing Violent Extremism (PVE) initiatives. Among radicalized individuals, we see that both learning and control frameworks are significantly associated with participation in violence. Thus, when examining the role that such initiatives may have on limiting the violence of high-risk radicalized individuals, focus should be placed on 1) encouraging prosocial relationships and investment in prosocial outcomes, and 2) limiting access to those who would promote violent behaviors (e.g., gangs and known extremist groups).

Future research on this topic should explore three primary avenues. First, as suggested in LaFree et al.,[97] authors should continue to capitalize on the PIRUS data – examining the capacity of other criminological theories to explain ideologically motivated behavior. Second, the use of advanced imputation and analytic techniques should continue to be considered in applying quantitative methods to terrorism research – particularly when paired with appropriate robustness and quality checks. Finally, quantitative analysis should be supplemented with a qualitative examination of the lived experiences of radicalized individuals through primary data collection or the assessment of narrative life histories of radicalized individuals that could shed light on the perceived importance of the various theoretical mechanisms at work. With such information, researchers could aid the broader goal of better understanding the causes of violence among extremists and improving strategies to prevent it.

Notes

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and Countering Terrorism," *Crime and Justice* 38, no. 1 (2009): 413–77, doi:10.1086/599201; Gary LaFree et al., "Correlates of Violent Political Extremism in the United States*," *Criminology* 56, no. 2 (May 1, 2018): 233–68, doi:10.1111/1745-9125.12169.

19. This definition of extremism is broader than the term "terrorism" as it is operationally defined elsewhere. While terrorism is described variously as "the threatened or actual use of illegal force and violence by a non-state actor to attain a political economic, religious, or social goal through fear, coercion, or intimidation" (see "Global Terrorism Database Codebook: Inclusion Criteria and Variables" (University of Maryland, June 2017), 10, https://www.start.umd.edu/gtd/downloads/Codebook.pdf.) and "the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives" (see "Federal Bureau of Investigation." *Code of Federal Regulations*, title 28 (2018): 52. https://www.govinfo.gov/content/pkg/CFR-2018-title28-vol1/pdf/CFR-2018-title28-vol1-sec0-85.pdf), extremist behavior includes other non-violent ideologically motivated acts (e.g., financial crimes, recruiting individuals to extremist organizations, providing material support for terrorism). Examples of non-violent criminal (and non-criminal) far right extremist behavior are discussed in Kerodal, Freilich, and Chermak in "Commitment to extremist ideology: Using factor analysis to move beyond binary measures of extremism". Studies in Conflict & Terrorism, 39, no. 7-8 (April 6, 2016): 687-711, doi:10.1080/1057610X.2016.1141012. Notably, work adapting a critical lens to the study of terrorism has highlighted the importance of distinguishing 1) non-violent, legal expressions of extremist ideologies from 2) non-violent criminal extremism and 3) violent extremism, highlighting how overlap in the discourse surrounding these distinct behaviors has resulted in overpolicing or 'mission creep' among agencies tasked with counter-terrorism responsibilities (see Recep Onursal and Daniel Kirkpatrick, "Is Extremism the 'New' Terrorism? The Convergence of 'Extremism' and 'Terrorism' in British Parliamentary Discourse," *Terrorism and Political Violence* 0, no. 0 (April 22, 2019): 1–23, doi:10.1080/09546553.2019.1598391.). While affirming the importance of this theoretical and conceptual granularity, the definition applied here focuses on differentiating between violent and non-violent criminal extremist behavior.

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66. The PIRUS codebook defines this as the individual's age at the time of the ideologically motivated behavior or the time of their arrest "Profile of Individual Radicalization in the United States (PIRUS)," 25..

67. The ideological milieu for each individual in PIRUS has been coded as either Far Right (39.9%), Far Left (17.4%), Islamist (24.5%), or Single Issue (18.2%) (definitions available on the PIRUS FAQ site "PIRUS - Frequently Asked Questions | START.Umd.Edu," *PIRUS - Frequently Asked Questions*, accessed May 1, 2017, http://www.start.umd.edu/pirus-frequently-asked-questions.). While of interest to research and previously linked to the probability of violence (see LaFree et al. "Correlates of Violent Political Extremism in the United States*."), ideological milieu is not the focus of this study.

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72. The model specification for the imputation procedure executed here is available upon request.

73. By necessity, these correlations are based on the original (unimputed) values.

74. LaFree et al., "Correlates of Violent Political Extremism in the United States*."

75. The values for Work History and Unstructured Time have a Pearson *r* correlation of -0.4969 suggesting possible multicollinearity. Sensitivity analyses selectively omitting Work History and Unstructured Time from Models 1 and 3 were performed. While in neither case the omission of either variable resulted in a statistically significant result (at $p < 0.05$ or $p < 0.10$), model fit statistics appear to be optimized when the Unstructured Time variable was omitted.

76. "Correlates of Violent Political Extremism in the United States*."

77. "Toward a Social Learning Model of Violence and Terrorism."

78. "Correlates of Violent Political Extremism in the United States*."

79. "Crime and Deviance over the Life Course."

80. Kruglanski et al., "The Psychology of Radicalization and Deradicalization"; Jasko, LaFree, and Kruglanski, "Quest for Significance and Violent Extremism."

81. "When the Ties That Bind Unwind."

82. "Cut from the Same Cloth?"

83. Jean Marie McGloin and Alex R. Piquero, "'I Wasn't Alone': Collective Behaviour and Violent Delinquency," *Australian & New Zealand Journal of Criminology* 42, no. 3 (December 1, 2009): 336–53, doi:10.1375/acri.42.3.336; Kyle J. Thomas, "Delinquent Peer Influence on Offending Versatility: Can Peers Promote Specialized Delinquency?," *Criminology* 53, no. 2 (May 1, 2015): 280–308, doi:10.1111/1745-9125.12069.

84. Paul Gill, "Terrorist Violence and the Contextual, Facilitative and Causal Qualities of Group-Based Behaviors," *Aggression and Violent Behavior* 17, no. 6 (November 1, 2012): 565–74, doi:10.1016/j.avb.2012.08.002.

85. James C. Howell and Arlen Egley, "Moving Risk Factors into Developmental Theories of Gang Membership," *Youth Violence and Juvenile Justice* 3, no. 4 (October 1, 2005): 334–54, doi:10.1177/1541204005278679; Terence P. Thornberry, "Toward an Interactional Theory of Delinquency," *Criminology* 25 (1987): 863–92.

86. LaFree et al., "Correlates of Violent Political Extremism in the United States*."

87. This divergence could be a function of the ∼300 recently added cases in PIRUS which are predominantly individuals who radicalized into Islamist organizations and traveled abroad to receive training or participate in violent jihad. These are colloquially referred to as "Foreign Terrorist Fighters" (FTFs).

88. Jasko, LaFree, and Kruglanski, "Quest for Significance and Violent Extremism"; LaFree et al., "Correlates of Violent Political Extremism in the United States*"; Pyrooz et al., "Cut from the Same Cloth?"; Safer-Lichtenstein, LaFree, and Loughran, "Studying Terrorism Empirically."

89. Graham, "Missing Data Analysis"; Donald B. Rubin, "Inference and Missing Data," *Biometrika* 63, no. 3 (December 1, 1976): 581–92, doi:10.1093/biomet/63.3.581.

90. Hirschi, *Causes of Delinquency.*

91. James D. Unnever et al., "Racial Discrimination and Hirschi's Criminological Classic: A Chapter in the Sociology of Knowledge," *Justice Quarterly* 26 (2009): 377–409.

92. Erin Grinshteyn and David Hemenway, "Violent Death Rates: The US Compared with Other High-Income OECD Countries, 2010," *The American Journal of Medicine* 129, no. 3 (March 1, 2016): 266–73, doi:10.1016/j.amjmed.2015.10.025.

93. Gary LaFree and Bianca E. Bersani, "County-Level Correlates of Terrorist Attacks in the United States," *Criminology & Public Policy* 13, no. 3 (August 1, 2014): 455–81, doi:10.1111/1745-9133.12092; Robert J. Sampson, Stephen W. Raudenbush, and Felton Earls, "Neighborhoods and Violent Crime: A Multilevel Study of Collective Efficacy," *Science* 277, no. 5328 (August 15, 1997): 918–24, doi:10.1126/science.277.5328.918.

94. David C. Pyrooz, ""From Your First Cigarette to Your Last Dyin' Day": The Patterning of Gang Membership in the Life-Course," *Journal of Quantitative Criminology* 30, no. 2 (June 1, 2014): 349–72, doi:10.1007/s10940-013-9206-1.

95. The mean age for those identified as having gang ties in PIRUS slightly lower than that of those without a history of gang involvement (32.2 vs. 33.7). Pyrooz Ibid. reports that peak initial involvement is typically between 14 and 15, and tenure is most often 2-3 years, though trajectory models revealed a small but notable trajectory of persistent involvement.

96. As described in Pyrooz et al. "Cut from the Same Cloth?", individuals with gang ties comprise a small proportion of PIRUS cases (5% here) and appear to resemble extremists more than current gang members in NLSY97.

97. "Correlates of Violent Political Extremism in the United States*."