

## Original Research Reports

# American State Gun Law Strength and State Resident Differences in Neuroticism Levels

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### Abstract

Relations between state gun law strength and state-aggregated levels of Republican leaning, gun ownership, and resident Big Five neuroticism (based on 619,397 residents nationally) were determined in a state-level analysis of the 50 American states using multiple regression strategies with state socioeconomic status, white population percent, and urban population percent statistically controlled. In a standard hierarchical model with state gun law strength as the criterion, the three demographic variables accounted for 44.4% of the variance and the Big Five accounted for another 21.9%. When the Big Five entered stepwise after the demographics, neuroticism was the sole significant personality predictor, accounting for another 13.4% of the variance. Greater state gun law strength was associated with higher state resident neuroticism. Further hierarchical regression analyses showed that state Republican leaning and gun ownership could account separately and jointly for significant variance in state gun law strength but not with state resident neuroticism controlled.

**Keywords:** gun laws, Big Five, neuroticism, American states, Republican, gun ownership, partisanship

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Gun laws in the USA are controversial in part because of the ambiguity of the Second Amendment to the U.S. Constitution which asserts that “A well-regulated Militia, being necessary to the security of a free State, the right of the people to keep and bear Arms, shall not be infringed” (e.g., [Tushnet, 2008](#); [Vernick, 2013](#)). The wording has left much to interpretation to determine in what circumstances carrying or owning a firearm should be considered legal (e.g., [Glantz & Annas, 2009](#)). As a result, over the years each state has enacted different laws involving the regulation, possession, sales, and use of firearms within this federal context.

However, in 2008 the U.S. Supreme Court in the case of *District of Columbia v. Heller* concluded that the Second Amendment means that a person indeed does have the right to keep a gun in the home for self-defense. This decision has stirred further heated debate and prompted extensive litigation regarding state and federal gun laws ([Law Center to Prevent Gun Violence, 2014](#)). Despite the Supreme Court ruling, many issues persist and new

ones have arisen concerning the legality of certain aspects of state firearm regulations and the possibility of strengthening state gun control laws.

## Political Preference, Gun Ownership, and Gun Control

Politically, Democrats and Republicans are highly polarized (e.g., [Gilbert, 2013](#)) and this division also is evident in regard to gun law issues. Democrats tend to support and Republicans tend to oppose stricter gun laws. For example, a CBS News/New York Times national poll ([PollingReport.com, 2014](#)) of 1,644 adults asked the following question: “In general, do you think laws covering the sale of guns should be made more strict, less strict, or kept as they are now?” The results showed that 77% of Democrats and 33% of Republicans thought gun laws should be stricter, 3% of Democrats and 15% of Republicans thought gun laws should be less strict, and 19% of Democrats and 51% of Republicans thought gun laws should be retained in their present form.

Owning a gun also is related to whether or not one is supportive of strengthening gun laws. For example, [Kleck, Gertz, and Bratton \(2009\)](#) found that those who own handguns are less likely to support handgun bans, [Celinska \(2007\)](#) found that gun owners were much more likely to be opponents of gun permits, and [Wolpert and Gimpel \(1998\)](#) found in six CBS News/New York Times polls conducted between 1981 and 1993 that gun ownership was negatively correlated with support for several firearm control proposals.

As well, gun owners are more likely to be Republicans (e.g., [Adams, 1996](#)). Results of an exit poll conducted during the 2008 presidential election showed that approximately 60% of Republicans but only 25% of Democrats indicated that they had a gun in their home ([Silver, 2012](#)). Also, during the 2012 presidential election, the 10 states with the highest level of gun ownership in 2007 all were considered solidly Republican while only one of the 10 states with the lowest level of gun ownership was considered staunchly Republican ([White, 2012](#)).

## Personality and Gun Control

Given the pervasiveness of strongly held attitudes in the highly charged social arena of public opinion regarding gun control, it is somewhat surprising that there has been almost no research specifically centered on the potential relations of personality variables to attitudes toward gun ownership and gun laws. Apparently, only three disparate studies with relatively small samples have been published in the psychological literature. [Diener and Kerber \(1979\)](#), concluded that gun owners tended to be more open-minded and to have a higher need for power while non-owners tended to be more sociable and had a higher need for affiliation, [Bernard and Lester \(1998\)](#) found that a negative attitude toward gun ownership was associated with lower psychoticism, and [Nelson and Milburn \(1999\)](#) reported that opposition to gun control was associated with higher scores on measures of social dominance, religious/social authoritarianism, and militaristic attitudes.

Research on the relations of the traits of the most widely accepted personality model, the “Big Five” ([Costa & McCrae, 1995](#); [Goldberg, 1990](#); [John & Srivastava, 1999](#)), to gun ownership and gun control attitudes is virtually nonexistent. The “Big Five” consists of five relatively uncorrelated broad trait dimensions: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. Among several other associated characteristics, those high on openness to experience are higher on intellectual curiosity, imagination, aesthetic interest, willingness to experiment, tolerance for diversity, and depth of emotions. Those high on conscientiousness are higher on self-discipline, deliberation, propensity for order, competence, dutifulness, and achievement striving. Those high on extraversion are higher on gregariousness, assertiveness, activity, excitement seeking, positive emotions, and warmth. Those high on agreeableness are higher on compliance, altruism, trust, straight-forwardness, tender-

mindedness, and modesty. Those high on neuroticism are higher on anxiety, vulnerability, self-consciousness, angry hostility, impulsiveness, and depression (Costa & McCrae, 1995).

Although research has not been conducted on the relations of the Big Five to gun ownership and gun control attitudes, there have been studies at both the individual and state levels of the relations of the Big Five to ideology and partisanship. For example, at both levels of analysis, neuroticism has been found to be related to ideological orientation and partisanship. With individuals as the units of analysis, lower neuroticism has been found to be associated with conservatism (Gerber, Huber, Doherty, Dowling, & Ha, 2010; Gosling, Rentfrow, & Swann, 2003; Mondak & Halperin, 2008) and Republican Party preference (Barbaranelli, Caprara, Vecchione, & Fraley, 2007; Mondak & Halperin, 2008; Peterson & Maiden, 1993). With the states of the USA as units of analysis, McCann (2014a) found that lower resident neuroticism in a state was quite consistently linked to higher levels of social, political, and economic conservatism in a state. McCann (2014b) extended this line of inquiry to partisanship and found that lower state resident neuroticism also was associated with state-level Republican Party preference.

Neuroticism is related to conservative-liberal ideological orientation and Republican-Democratic leaning, and ideology and partisanship also are related to gun law attitudes and gun ownership. Therefore, it is plausible that neuroticism also may be related to gun law attitudes and the strength of gun laws in a state. Furthermore, it is plausible that neuroticism could be at the root of the associations that have been reported between less positive gun control attitudes and greater Republican Party support and higher levels of gun ownership.

## Five Potential Pathways Relating State Resident Personality to State Gun Law Strength

But what is the dynamic process through which a trait such as neuroticism might become expressed geographically on a dimension such as state gun law strength? The present study was conducted from the emerging perspective of geographical psychology (Rentfrow, 2010, 2014a, 2014b) and used state estimates of resident standing on each of the Big Five personality variables. According to this approach, such connections between traits and social indicators can develop through five different pathways (see also McCann, 2014b). In Path A, if residents of a geographical space are disproportionately higher or lower on a trait, then there should be corresponding psychological and behavioral manifestations of that trait in that space. In Path B, if psychological and behavioral manifestations of a trait are prominent in a space, then those tendencies should eventually lead to the development of institutions in that area that support those tendencies. In Path C, prevalent psychological and behavioral manifestations can create a psychosocial climate in an area that socially influences even residents of contrary disposition to conform to the norms of that area. In Path D, social and institutional structure variables in an area can have an impact on psychological and behavioral tendencies by limiting or enhancing opportunities for residents of that area. In Path E, the social norms of an area influence the prevalence of traits because socialization fosters the acquisition of relevant traits, because new residents with similar traits are drawn from elsewhere to that area, and because residents with dissimilar traits may choose to leave that area.

How might these five pathways potentially be involved in creating the link between state resident neuroticism and state gun law strength? In Path A, if residents of a state are disproportionately higher on neuroticism, then there should be corresponding support for strong gun laws in that state. This path assumes that correlations between neuroticism and attitudes toward gun control with individuals as the units of analysis are reflected in similar correlations between state levels of resident neuroticism and state gun law strength with states as the units of analysis in the present research context. In a similar manner, if residents are higher on neuroticism, then there also should be greater gravitation to liberalism and support for the Democratic Party as well as lower levels of gun ownership.

In Path B, if support for strong gun laws is prominent in a state because resident neuroticism is high, then that should eventually result in the development of institutions in that state that support stronger gun laws. For example, it is reasonable in such states to expect a greater number of advocacy groups for stricter gun laws and more institutions and policies supporting liberal and Democratic causes. Of course, the converse also is true: If support for permissive gun laws is prominent in a state because resident neuroticism is low, then that should eventually result in the development of institutions in that state that support weaker gun laws. For example, it also is reasonable to assume that there will be a greater proliferation of shooting ranges, gun clubs, National Rifle Association (NRA) activities, and institutions and policies supporting conservative and Republican causes in states where residents generally are lower on the neuroticism dimension.

In Path C, prevalent support for strong gun laws based on the wishes of those who are high on the neuroticism dimension can produce a psychosocial climate in a state that socially influences even residents lower on neuroticism to conform to the norms of that state. Similarly, prevalent support for weaker gun laws based on the wishes of those who are low on the neuroticism dimension can produce a psychosocial climate in a state that socially influences even residents higher on neuroticism to conform to the norms of that state. Therefore, depending upon higher or lower levels of neuroticism in a state, the norms in a state will reflect aspects of liberalism or conservatism, higher or lower support for the Democratic Party, and lower or higher levels of gun ownership.

In Path D, social and institutional structure variables in a state put in place and sustained by residents high on neuroticism can have an impact on support for strong gun laws by enhancing opportunities for residents of that state to think and behave in line with their desire for strong gun control and limiting opportunities to think and behave in ways contrary to strict gun control. Of course, social and institutional structure variables in a state put in place and sustained by residents low on neuroticism can have an impact on support for more permissive gun laws by enhancing opportunities for residents of that state to think and behave in line with their preference for weaker gun control and limiting opportunities to think and behave in ways contrary to weaker gun control. It follows that residents also will have few or many opportunities to think and act in line with ideological leaning, political party preference, or gun ownership according to whether the residents of a state are relatively high or low on neuroticism.

In Path E, the social norms of a state influence the prevalence of higher resident neuroticism at least to some degree because socialization plays a part along with hereditary processes in fostering whether a person displays higher or lower levels of neuroticism.<sup>1</sup> Socialization also promotes the norms of a state in regard to ideological leaning, political party preference, and gun ownership. The social norms of a state also influence the prevalence of higher resident neuroticism in a state because new residents with higher neuroticism are drawn from elsewhere to that state, and those incoming residents also are likely to be more ideologically liberal, to be Democratic Party supporters, and not to be gun owners. In addition, residents with lower neuroticism may choose to leave that state because they are uncomfortable with the norms of that state, and those outgoing residents are more likely to be ideologically conservative, to be Republican Party supporters, and to own guns.

## The Present Research

The prime objective of the present research was to determine and disentangle the relations between state gun law strength and state-aggregated levels of resident neuroticism, Republican leaning, and gun ownership in a state-level analysis using multiple regression strategies. Neuroticism was the Big Five variable thought to be most implicated in the current context but relations involving openness, conscientiousness, extraversion, and agreeableness were examined as well. Although it was reasoned that neuroticism may be a key variable underlying

the associations between state gun law strength, state Republican leaning, and state levels of gun ownership, no specific predictions were made in regard to these relations.

The analysis also considered whether or not relations in this context could be accounted for by several state demographic control variables. The states are noticeably different on the major dimensions of socioeconomic status (SES), race, and urbanization. Furthermore, past research has shown that these demographic factors are related to several key variables in the present study. For example, aspects of SES such as education or income have been associated with endorsement of gun control (e.g., [Celinska, 2007](#); [Kleck, 1996](#)), Republican preference (e.g., [Fay, 2012](#); [Schmidt, Shelley, Bardes, & Ford, 2014](#)), and rates of gun ownership (e.g., [Ross, 2001](#); [Smith, 2001](#)). Being white also has been associated with lower endorsement of gun control (e.g., [Celinska, 2007](#); [Pew Research Center, 2010](#)), Republican preference (e.g., [Fay, 2012](#); [Pew Research Center, 2010](#)), and higher rates of gun ownership (e.g., [Dixon & Lizotte, 1987](#); [Silver, 2012](#)). Living in a more urban area has been associated with greater gun control endorsement (e.g., [Celinska, 2007](#); [Pew Research Center, 2010](#)), Democratic preference (e.g., [Fay, 2012](#); [Kron, 2012](#)), and lower rates of gun ownership (e.g., [Dixon & Lizotte, 1987](#); [Silver, 2012](#)). Therefore, SES, race, and urbanization were statistically controlled in the hierarchical multiple regression equations of the present study.

## Method

### Measures

#### The Strength of State Gun Laws

The present study used an index of the relative strength of existing state gun laws as the criterion. It was reasoned that state gun laws have been put in place and maintained according to the attitudes and wishes of state residents over time. Stronger, more restrictive, gun laws imply more negative attitudes toward guns and their use; weaker, more permissive, gun laws imply more positive attitudes toward guns and their use. Perhaps it would have been desirable also to have polling results in regard to attitudes toward gun laws in sufficiently large representative samples for each state in the nation so that a reliable and valid index of state-aggregated attitude values toward gun laws could serve as a second criterion, but no such comprehensive database of state attitude scores exists. It also was reasoned that the nature of the majority collective attitude and will of state residents in regard to gun control may stem at least in part from aspects of the modal Big Five personality profile of state residents, especially in regard to neuroticism, because state resident personality is assumed to be a relatively stable force over fairly long periods of time.

The Gun Laws Matter study ([Law Center to Prevent Gun Violence, 2010, 2013](#)) developed a point system for ranking the gun laws of each of the 50 states in 2010 based on an analysis of 25 firearm regulation policy approaches. More points were awarded to each state according to the strength of the gun laws. Positive points were given for gun laws that enhanced the regulation and control of gun ownership and gun use; negative points were given for gun laws that weakened the regulation and control of gun ownership and gun use. Examples of stronger gun laws were: require dealer employee background checks; require all firearm transfers to be through licensed dealers; require license to purchase or possess ammunition; require registration for all firearms; prohibit the carrying of concealed firearms; and prohibit a broad range of activities regarding the possession, manufacture and sale of assault weapons and large capacity ammunition magazines. Examples of weaker gun laws were: allow

loaded firearms in some establishments that serve alcohol; declare that federal law does not apply to firearms made and kept in a state; allow concealed carry without a permit; allow open carry of handguns with no permit; prohibit local authority to regulate firearms; and impose almost no regulation on firearms. The points for each state were tabulated by the authors from strongest state gun laws (i.e., 47 points for California) to weakest state gun laws (i.e., -5 points for Arizona). In other words, higher scores indicated that a state had stricter gun laws and lower scores meant that a state had more permissive gun laws.

A visual examination of a normal curve superimposed on a histogram of the 2010 gun law index revealed departures from normality. The index ( $M = 8.36$ ;  $SD = 13.01$ ) had a skewness value of 1.56 and a standard error of skewness of .34. Therefore, the value for skewness divided by its standard error was 4.64, a value far exceeding the conventional critical value of absolute 2.00 or under for an indication of normality (George & Mallery, 2010). Similarly, the gun law index had a kurtosis value of 1.62 and a standard error of kurtosis of .66. The value for kurtosis divided by its standard error was 2.44, a value somewhat exceeding the critical value of absolute 2.00 or under for an indication of normality (George & Mallery, 2010). As well, the Shapiro-Wilk statistic was .797 ( $p < .001$ ), indicating non-normality.

Consequently, the 2010 gun law index was transformed to produce a more normal distribution by adding 6 to each original state score, because the logarithm of a number less than 1 is undefined, and then computing a log10 transformation (see Osborne, 2002). A visual examination of a normal curve superimposed on a histogram of the transformed variable showed a relatively normal distribution. As well, the transformed index ( $M = 1.00$ ;  $SD = .39$ ) produced skewness and kurtosis values well within the bounds of normality. The absolute value for skewness divided by its standard error was .40 and the absolute value for kurtosis divided by its standard error was .13. The Shapiro-Wilk statistic now was .981 ( $p = .584$ ), also indicating normality. The transformed 2010 gun law index was highly correlated with the original index ( $r = .89$ ,  $p < .001$ ).

### Big Five Personality Variables

State z scores on the Big Five personality variables were obtained from Rentfrow, Gosling, and Potter (2008). State scores were based on the mean responses within a state of 619,397 residents to the 44-item Big Five Inventory (John & Srivastava, 1999) in an internet survey conducted between December, 1999 and January, 2005. Sample sizes ranged from 71,873 in California to 1,536 in Wyoming. Rentfrow et al. also demonstrated that the sample was highly representative when compared to the 2000 census data, that the Big Five had high reliabilities with a mean Cronbach alpha of .81 at the individual level and .89 at the state level, and that the factor structure at the state level was almost identical to that commonly found at the individual level.

In regard to validity, these American state Big Five values already have been empirically related in meaningful ways to a range of diverse state indicator variables such as crime, religiosity, suicide, smoking, emotional health, residential mobility, social capital, well-being, income inequality, ideological orientation, partisanship, cancer and heart disease mortality rates, Twitter content, creativity, patent production, and entrepreneurial activity (e.g., de Vries, Gosling, & Potter, 2011; McCann, 2010a, 2010b, 2011a, 2011b, 2014a, 2014b, 2014c, 2014d, 2015; Obschonka, Schmitt-Rodermund, Silbereisen, Gosling, & Potter, 2013; Pesta, Bertsch, McDaniel, Mahoney, & Poznanski, 2012; Rentfrow, 2010, 2014a, 2014b; Rentfrow et al., 2008; Rentfrow, Jost, Gosling, & Potter, 2009; Rentfrow, Mellander, & Florida, 2009; Voracek, 2009).

## Political Party Preference

Partisanship in each state was based on the percent in each state that voted Republican in presidential elections in 2000, 2004, and 2008, and the percent of seats won by the Republicans in each state in the House of Representatives elections in 2000, 2004, and 2008. Presidential election data were obtained from [Leip \(2012\)](#). Data for the House of Representatives elections for congresses 107, 109, and 111 were taken from Congress Profiles (U.S. House of Representatives, 2014). Bernard Sanders, the Vermont Independent in the 107<sup>th</sup> Congress and the 109<sup>th</sup> Congress, was classified as a Democrat because he caucuses with the Democratic Party ([Bernie Sanders, 2014](#)) and is counted as a Democrat on committees (U.S. Senate, 2015). As well, the observed error in the official source which indicated that Barbara Cubin was an Independent in the 107<sup>th</sup> Congress was altered to classify her as a Republican. Percentages for each of the six variables were converted to z scores and a Republican preference composite score was created for each state by calculating the mean of the six resulting z scores. The Republican preference composite had a Cronbach alpha of .93.

## Gun Ownership

The state gun ownership variable contains the number of individual gun owners as a percentage of each state's population based on a survey conducted by the Behavioral Risk Factor Surveillance System (BRFSS) of the Centers for Disease Control and Prevention (CDC) in 2001 ([BRFSS, 2001](#)). The following question was asked in 2001, 2002, and 2004: "Are there any firearms now kept in or around your home? Include those kept in a garage, outdoor storage area, car, truck, or other motor vehicle." The responses were highly correlated across the years. For example, the Pearson correlation between the 2001 and the 2004 measure was .98 ([Miller, Barber, White, & Azrael, 2013](#)) but the 2001 survey had the lowest percentage (97.74%) responding "Yes" or "No" to the question. The 2001 version contains the most suitable state annual gun ownership data that could be located for the present study. Incidentally, these are the same data presented by [White \(2012\)](#) as "individual gun owners as a percentage of each state's population, as of 2007."

## SES

A composite SES variable was formed from two educational and three economic variables. Data for each state were taken from the *Statistical Abstract of the United States* pertaining to percent of population 25 and over with at least high school graduation in 2000 and 2009 ([U.S. Census Bureau, 2012](#)), percent of population 25 and over with at least an undergraduate degree in 2000 and 2009 ([U.S. Census Bureau, 2012](#)), personal income per capita in constant 2005 dollars in 2000 and 2010 ([U.S. Census Bureau, 2012](#)), unemployment rate in 2000 ([U.S. Census Bureau, 2001](#)) and in 2010 ([U.S. Census Bureau, 2012](#)), and percent of individuals living below the poverty line in 2000 and 2009 ([U.S. Census Bureau, 2012](#)). Suitable high school graduation, undergraduate degree, and poverty line data were not available for 2010, necessitating the use of 2009 data.

Correlations between 2000 and 2010 (or 2009) values were .96 for high school graduation, .99 for undergraduate degree, .90 for personal income, .86 for poverty line, and .36 for unemployment rate.<sup>ii</sup> For each state, the means of the 2000 and 2010 (or 2009) values for high school graduation, undergraduate degree, personal income, poverty line (with the sign reversed), and unemployment (with the sign reversed) were calculated. The five resulting variables then were converted to z scores, summed, and divided by 5. The resulting SES composite had a Cronbach alpha of .86.

### White Percent

The percent of the population that was white in each state in 2000 and 2010 was taken from the U.S. Census Bureau (2001, 2012). Percentages for 2000 and 2010 were highly correlated ( $r = .99$ ). For each state, the mean of the two served as the state white percent variable.

### Urban Percent

The percent of the population that was urban in each state in 2000 and 2010 was obtained from the U.S. Census Bureau (2010, 2012). The percentages for the two years were almost perfectly correlated ( $r = .99$ ). For each state, the mean of the two served as the state urban percent variable.

## Results

Means, standard deviations, and Pearson correlations for the 11 variables in the following analyses are shown in Table 1 (and raw scores for each state are displayed in Table A1 in the Appendix). The transformed gun law variable significantly correlated positively with openness, SES, and urban percent, and significantly correlated negatively with party preference, gun ownership, and white percent. These correlations suggest that stronger state gun control laws are associated with higher openness, higher SES, higher urban percent, Democratic Party preference, lower gun ownership, and lower white percent at the state level of analysis. Although the correlations showed that neuroticism was not significantly correlated with the gun law variable ( $.19, p = .19$ ) or gun ownership ( $-.20, p = .17$ ), it was significantly correlated negatively with party preference. Higher state resident neuroticism was associated with voting Democrat and there was a non-significant tendency for states with higher resident neuroticism to have stronger gun laws and lower gun ownership.

Table 1

*Descriptive Statistics and Pearson Correlations for the Variables in the Study (N = 50)*

State variables	M	SD	1	2	3	4	5	6	7	8	9	10	11
1. Gun law strength	1.00	.39	1.00										
2. Openness	-.07	.89	.29*	1.00									
3. Conscientiousness	.01	1.01	-.25	.05	1.00								
4. Extraversion	-.03	.98	-.03	-.51***	.43**	1.00							
5. Agreeableness	.06	.95	.01	-.09	.67***	.55***	1.00						
6. Neuroticism	.01	1.01	.19	.13	-.27	-.15	-.06	1.00					
7. Party preference	.00	.86	-.48***	-.34*	.30*	.06	-.07	-.31*	1.00				
8. Gun ownership	37.61	13.36	-.72***	-.44***	.14	.14	.02	-.20	.63***	1.00			
9. SES	.00	.79	.36**	.08	-.35*	-.08	-.15	-.26	-.29*	-.40**	1.00		
10. White percent	78.11	12.92	-.35*	-.06	.01	.15	.08	.01	.16	.43**	.17	1.00	
11. Urban percent	72.64	14.72	.61***	.39**	.04	-.08	-.08	-.19	-.22	-.76***	.26	-.45***	1.00

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

The lack of an expected significant Pearson correlation between state resident neuroticism levels and state gun law strength prompted further examination. The direction of correlation of some variables shows a pattern suggesting that state SES and urban population percent might serve as suppressor variables in the correlation between

state levels of neuroticism and gun control (Cohen, Cohen, West, & Aiken, 2003; Lowry, 2012; UNC, 2008). When a predictor correlates positively with a criterion and negatively with a second predictor, the correlation between the second predictor and the criterion is likely to be suppressed and only surface when the first predictor serves as a control in partial correlation (UNC, 2008, p. 5). SES correlated positively with gun law strength and negatively with neuroticism. As well, urban percent correlated positively with gun law strength and negatively with neuroticism ( $r = -.19, p = .18$ ). Furthermore, “material suppression effects are likely to be found in analyses of aggregate data ... because of the small error variance that results in these conditions” (Cohen et al., 2003, p. 78).

Therefore, partial correlations were computed to test the suspected suppression of the correlation between state resident neuroticism and state gun law strength (UNC, 2008). With state differences in SES controlled, partial correlation revealed the expected relation between state levels of neuroticism and gun law strength,  $r_p(47) = .32, p < .05$ . With state differences in urban population percent controlled, partial correlation also revealed the expected relation between neuroticism and gun law strength,  $r_p(47) = .39, p < .01$ . Finally, with state differences in SES and urban population percent controlled, partial correlation revealed an even stronger relation between state resident neuroticism and gun law strength,  $r_p(46) = .48, p < .001$ . Similar suppression effects also occur in a hierarchical multiple regression equation using the same variables. For example, with state SES and urban population percent entered as a block and followed by neuroticism entered alone, neuroticism accounted for another 10.1% of the gun law variance,  $F(1, 46) = 7.91, p < .01$ .

To determine the state gun law criterion variance accounted for by the Big Five personality variables with the three demographic variables controlled, a hierarchical multiple regression equation (Table 2, Equation 1) was computed with the demographic variables entered as a block on the first step and the five personality variables entered as a block on the second. The three demographic variables accounted for 44.4% of the variance,  $F(3, 46) = 12.24, p < .001$ , and the Big Five accounted for an additional 21.9%,  $F(5, 41) = 5.34, p < .001$ . The standardized regression coefficients (see the  $\beta$ s in Table 2) showed that with the other seven predictors in the equation controlled, stronger state gun laws were associated with higher urban percent, lower resident conscientiousness, higher resident agreeableness, and higher resident neuroticism.

However, when the three demographic variables were entered as a block and followed by the Big Five selected stepwise (Table 2, Equation 2) to determine predictor redundancy and potentially preserve degrees of freedom in later regression equations, neuroticism surfaced as the only significant independent personality predictor. With the demographic variables controlled, neuroticism accounted for an additional 13.4% of the variance in the gun law criterion,  $F(1, 45) = 14.26, p < .001$ . The significant  $\beta$ s in Table 2 show that stronger gun laws were associated with higher state SES, higher state urban percent, and higher state resident neuroticism. In this predictor context, having neuroticism in the equation eliminated the capacity for any other Big Five personality variable to independently account for additional variance in the transformed gun law criterion.

To determine the state gun law criterion variance accounted for by party preference, a multiple regression equation (Table 2, Equation 3) was computed with the demographic variables entered as a block on the first step, the party preference variable entered on the second step, and neuroticism entered on the third step. The party preference variable accounted for an additional 8.4% of the gun law criterion variance,  $F(1, 45) = 8.00, p < .01$ , and neuroticism accounted for a further increment of 7.0%,  $F(1, 44) = 7.63, p < .01$ . When party preference entered the equation, it showed that gun law strength was associated with greater state Democratic preference. However, with all five variables in the equation, the significant  $\beta$ s in Table 2 show that stronger gun laws were associated only with

higher SES, higher urban percent, and higher state resident neuroticism. In contrast, when the entry order of neuroticism and party preference was reversed (Table 2, Equation 4) and neuroticism consequently was controlled, the additional variance accounted for by party preference was reduced to a non-significant 2.0%,  $F(1, 44) = 2.18$ ,  $p = .15$ .

Table 2

*Hierarchical Multiple Regression Equations Computed With State Gun Laws as the Dependent Variable*

Equation	Step	Entry method	Predictors	df	R <sup>2</sup> change	F	Significant $\beta$ predictors	$\beta$	t
1	1	Block	demographic variables	3, 46	.444	12.24***	Urban percent	.47	3.64***
	2	Block	Big Five	5, 41	.219	5.34***	Conscientiousness	-.41	-2.59*
							Agreeableness	.29	2.05*
							Neuroticism	.26	2.30*
2	1	Block	demographic variables	3, 46	.444	12.24***	SES	.37	3.36***
	2	Stepwise	Big Five (Neuroticism)	1, 45	.134	14.26***	Urban percent	.50	4.22***
							Neuroticism	.38	3.78***
3	1	block	demographic variables	3, 46	.444	12.24***	SES	.30	2.55*
	2	forced	Party preference	1, 45	.084	8.00**	Urban percent	.48	4.07***
	3	forced	Neuroticism	1, 44	.070	7.63**	Neuroticism	.31	2.76**
4	1	block	demographic variables	3, 46	.444	12.24***	SES	.30	2.55*
	2	forced	Neuroticism	1, 45	.134	14.26***	Urban percent	.48	4.07***
	3	forced	Party preference	1, 44	.020	2.18	Neuroticism	.31	2.76**
5	1	block	demographic variables	3, 46	.444	12.24***	SES	.31	2.19*
	2	forced	Gun ownership	1, 45	.091	8.82**	Urban percent	.39	2.06*
	3	forced	Neuroticism	1, 44	.047	4.99*	Neuroticism	.31	2.23*
6	1	block	demographic variables	3, 46	.444	12.24***	SES	.31	2.19*
	2	forced	Neuroticism	1, 45	.134	14.26***	Urban percent	.39	2.06*
	3	forced	Gun ownership	1, 44	.005	.49	Neuroticism	.31	2.23*
7	1	block	demographic variables	3, 46	.444	12.24***	SES	.32	2.27*
	2	block	Party preference				Urban percent	.52	2.44*
			Gun ownership	2, 44	.103	5.00*	Neuroticism	.33	2.34*
3	forced	Neuroticism	1, 43	.051	5.48*				
8	1	block	demographic variables	3, 46	.444	12.24***	SES	.32	2.27*
	2	forced	Neuroticism	1, 45	.134	14.26***	Urban percent	.52	2.44*
	3	block	Party preference				Neuroticism	.33	2.34*
			Gun ownership	2, 43	.020	1.09			

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Similarly, to determine the state gun law criterion variance accounted for by state levels of gun ownership, a multiple regression equation (Table 2, Equation 5) was computed with the demographic variables entered as a block on the first step, gun ownership entered on the second step, and neuroticism entered on the third. Gun ownership accounted for an additional 9.1% of the gun law criterion variance,  $F(1, 45) = 8.82$ ,  $p < .01$ , and neuroticism accounted for a further increment of 4.7%,  $F(1, 44) = 4.99$ ,  $p < .05$ . When gun ownership entered the equation, it showed that gun law strength was associated with lower gun ownership. However, with all five variables in the equation, the significant  $\beta$ s in Table 2 show that stronger gun laws were associated only with higher SES, higher urban percent, and higher state resident neuroticism. But when the entry order of neuroticism and gun

ownership was reversed (Table 2, Equation 6) and neuroticism was controlled, the additional variance accounted for in the gun law criterion by gun ownership was reduced to a non-significant .5%,  $F(1, 44) = .49$ ,  $p = .49$ .

The combined capacity of state party preference and state gun ownership levels to account for variance in the transformed state gun law criterion also was examined. The three demographic variables were entered as a block on the first step, both the party preference variable and the gun ownership variable were entered as a block on the second step, and neuroticism was entered on the third step (Table 2, Equation 7). Party preference and gun ownership together accounted for an additional 10.3% of the gun law criterion variance,  $F(2, 44) = 5.00$ ,  $p < .05$ , and neuroticism accounted for a further increment of 5.1%,  $F(1, 43) = 5.48$ ,  $p < .05$ . The significant  $\beta$ s in Table 2 show that stronger gun laws were associated with higher state SES, higher state urban percent, and higher state resident neuroticism. When neuroticism was entered on the second step and both party preference and gun ownership were entered as a block on the third step (Table 2, Equation 8), party preference and gun ownership together only accounted for a further non-significant 2.0% of the variance in the gun law criterion,  $F(2, 43) = 1.09$ ,  $p = .35$ .

For comparison purposes, all of the preceding main analyses were repeated with the original non-transformed gun law variable. Few substantive differences emerged in the results (see Table A2). No changes in direction of relation occurred but there were several minor changes in whether a relation was significant or not. Most changes in magnitude to change the significance status of correlations and  $\beta$  weights involved rather small shifts in size with the largest being .10 (e.g., change in  $\beta$  from .39 to .29). As well, in Equation 4 the variance accounted for by party preference increased from a non-significant 2.0% to a significant 4.3%, and in Equation 8 the variance accounted for by party preference and gun ownership also increased from a non-significant 2.0% to a significant 4.3%.

The eight original multiple regression equations with the transformed gun law variable also were examined for degree of multicollinearity using the SPSS VIF and Tolerance measures. VIF values greater than 10 and Tolerance values less than .10 suggest multicollinearity issues (Chen, Ender, Mitchell, & Wells, 2015). However, the largest VIF value was 8.837 and the lowest Tolerance value was .113. Both were found in Equation 8 and both centered on the gun ownership variable. All other equations had much lower VIF values and much higher Tolerance values. Therefore, these multicollinearity analyses do not indicate any problems and suggest that the regression results are quite robust.

## Discussion

Evidence has been produced in the present study to show that the strength of state gun laws is associated with higher neuroticism among state residents. Hierarchical multiple regression results showed that greater state gun law strength was linked to higher state resident neuroticism when state SES, white population percent, and urban population percent were statistically controlled. The positive  $\beta$  coefficient for neuroticism was significant when all of the Big Five variables were entered as a block after the demographic variables, and neuroticism was the only significant personality predictor when the Big Five were selected in stepwise fashion with the demographic variables held constant (see Table 2, Equation 2).

The other Big Five personality variables were not reliably related to state gun law strength. In the hierarchical regression analyses, conscientiousness and agreeableness had significant negative  $\beta$  coefficients when all Big Five variables entered as a block after the demographics (see Table 2, Equation 1). However, neither was a significant predictor after neuroticism entered the equation first after the demographic variables (see Table 2, Equation 2).

Furthermore, hierarchical multiple regression equations also demonstrated that the relations found between state gun law strength and party preference and gun ownership could be wholly accounted for by the relation of state resident neuroticism to state gun law strength. With the demographic variables entered as a block on the first step, neuroticism entered on the second step, and Republican leaning entered on the third step, Republican leaning was not a significant predictor (see Table 2, Equation 4). Similarly, when neuroticism was entered on the second step and gun ownership on the third, gun ownership was not a significant predictor (see Table 2, Equation 6). In fact, when neuroticism was entered on the second step and Republican leaning *and* gun ownership were entered jointly on the third step, Republican leaning *and* gun ownership together did not account for significant variance in state gun law strength (see Table 2, Equation 8). Clearly, the present research has shown that neuroticism can supplant political party preference and levels of gun ownership as predictors of state gun law strength with states as the units of analysis.

### How Can the Present Results Be Explained?

How can the overall thrust of the results of the present study be explained? The factors and processes of the five pathways (Rentfrow et al., 2008) through which a dispositional factor such as state resident neuroticism can become linked to state gun law strength seem rather efficient and compelling in regard to this state-level analysis. The coverage of the pathways as articulated in the introduction seems useful as a model for the present state level results. But in a different and more speculative vein, what might the basic attraction of highly neurotic persons to stronger gun laws depend upon at the individual level? Two tentative avenues could potentially explain why those higher on neuroticism tend to favor stricter gun laws: (1) the fear of crime and the tack favored by those higher on neuroticism in regard to protection, and (2) the conflict between cultural worldviews and the tendency of those higher on neuroticism to favor one side in the culture conflict.

In regard to the first approach, neuroticism can be “characterized by the pervasive perception that the world is a dangerous and threatening place, along with beliefs about one’s inability to manage or cope with challenging events” (Barlow, Ellard, Sauer-Zavala, Bullis, & Carl, 2014, p. 481). Consequently, one manifestation of being higher on neuroticism could be a greater fear of crime which in turn could lead to a greater fascination with gun control and gun law reform. While discussing the greater attraction of persons higher on the neuroticism dimension to liberal ideology and the Democratic Party, McCann (2014b) pointed out that those who are more neurotic may be more likely “to support parties that offer shelter against material or cultural challenges” (Schoen & Schumann, 2007, p. 492) and “to identify with those who seek redress through social interventions” (Gerber et al., 2010, p. 116). Perhaps the idea that it is “liberal economic policies that create ‘safety nets’ and reduce exposure to market risks” (Gerber et al., 2010, p. 116) also could be extended analogously to liberal policies that create “safety nets” in the form of stronger gun laws to protect citizens from the potential perils of gun crime resulting from the unrestricted ownership and use of firearms. Of course, it is the Democratic Party in current American politics that is most likely to espouse and promote such liberal approaches. Given these dispositional, ideological, and political party tendencies, the states where residents tend to be higher on neuroticism then would be expected to have a

history of residents with a more positive view of gun control, stronger state gun laws, and lower levels of gun ownership.

There also is research on fear of crime that more indirectly suggests the existence of a potential link between neuroticism and attitudes toward gun control. For example, [Klama and Egan \(2011\)](#) found that neuroticism was positively correlated with fear of crime and that neuroticism was positively related to a latent “distress” variable that was positively related to fear of crime in a structural equation model. As well, [Fyhri and Backer-Grøndahl \(2012\)](#) found that neuroticism was positively correlated with thinking about the possibility of an unpleasant experience such as crime, violence, and robbery. [Klama and Egan \(2011\)](#) also produced results that perhaps somewhat implicate other Big Five variables in regard to fear of crime but their direct and indirect connections to fear of crime clearly were not as strong and consistent as those for neuroticism. Inconsistent and contradictory results were found for openness, conscientiousness, and extraversion, while agreeableness showed no relation to fear of crime. Neuroticism clearly was the most important variable in the Klama and Egan context as it was in the present study.

The second approach centers on beliefs about the broader culture and worldview conflicts between those who support and those who reject restrictions on the acquisition and use of firearms (e.g., [Kleck, 1996](#); [Kleck et al., 2009](#)). Past research has shown that higher neuroticism is associated with liberal ideology and a preference for the Democratic Party at the individual level (e.g., [Barbaranelli et al., 2007](#); [Gerber et al., 2010](#)) and at the state level ([McCann, 2014a, 2014b](#)). Past studies also have shown that liberal ideology and a preference for the Democratic Party are associated with more positive attitudes toward gun control at the individual level (e.g., [Pew Research Center, 2010](#); [PollingReport.com, 2014](#)), and that Democratic Party preference and gun law endorsement are associated at the state level, at least in a somewhat indirect way (e.g., [Price, Dake, & Thompson, 2002](#)). Previous research has shown too that lower rates of gun ownership are associated at the individual level with liberal ideology (e.g., [Celinska, 2007](#)) and Democratic Party preference (e.g., [Silver, 2012](#)) and the association regarding Democratic leaning has been corroborated at the state level by [White \(2012\)](#). Therefore, one manifestation of being higher on neuroticism simply could be a broad rejection of the cultural group comprising those citizens with a worldview that endorses gun ownership and relatively little restriction on the purchase and use of guns. States with residents higher on neuroticism then also would be expected to have a history of more positive views of gun control and stronger state gun laws.

## Potential Applications of the Present Results

In mass media presentations, political pundits routinely associate Republican leaning and gun ownership with opposition to stringent state gun laws. However, although these associations have an empirical basis (e.g., [Kleck et al., 2009](#); [PollingReport.com, 2014](#); [Price et al., 2002](#); [Silver, 2012](#); [White, 2012](#)), the results of the present study suggest that the relations between Republican leaning, gun ownership, and a less restrictive gun law stance at the state level ultimately stem from aggregate differences between the states on the Big Five neuroticism-stability personality dimension of state residents. The underlying predictor of attitudes in regard to gun law controversy may well be neuroticism levels rather than Republican leaning or gun ownership, at least at the state level of analysis, and perhaps at the individual level too.

Generally, the results of the present study also may be helpful for politicians and public interest groups of different stripes in the formulation of their policies and strategies, especially those that involve state resident support. Knowing who to direct particular messages toward and the nature of messages that are most appealing to that

audience should be more effective than blanket persuasion approaches. In fact, such potential applications ultimately could be quite widespread, given the various cultural correlates of neuroticism, Republican preference, gun ownership, and gun law attitudes.

## Implications for Social Justice

Beliefs in human equality and advocacy for the eradication of social, economic, and political inequalities generally constitute what is referred to as social justice. [Blum \(2012\)](#) has asserted that any solution to the contemporary gun control controversy will have to include the issue as “part and parcel of the basic movement for social justice.” But it is not evident how or why “gun control” in and of itself qualifies as a social justice issue.

However, “gun violence” clearly does disproportionately affect the health and well-being of those who are younger, those who have lower incomes, and those who are not white, especially young black males (e.g., [Peterson, 2014](#); [Physicians for Social Responsibility, 2015](#); [Schaubn, 2013](#)), and health inequality certainly is a widely subscribed social justice issue (e.g., [Centre for Social Justice, 2007](#)). Leroy Duncan, an advocacy group organizer in Minnesota, suggests instead that gun violence in the USA should be recast as a racial justice issue under the umbrella of social justice ([Peterson, 2014](#)). Therefore, *gun violence* can be embraced logically as a social justice issue in the category of health inequality or racial inequality in a way that *gun control* cannot.

It is relatively common knowledge that those on the liberal side of the political spectrum are more likely to advocate for social justice while those on the conservative side are more likely to denounce such advocacy in their efforts to justify and maintain elements of the status quo ([Jost & Kay, 2010](#)). However, [McCann \(2014b\)](#) articulated why social justice advocacy may be more likely in areas where residents are higher on the Big Five personality dimension of neuroticism. Stressing the issues of “gun violence” rather than “gun control” in a context of social justice advocacy may prove more appealing and instrumental in ultimately obtaining greater support for selective changes in state gun laws that hold promise for curbing gun violence among individuals higher on the neuroticism dimension and in states where residents tend to have higher average neuroticism levels.

Furthermore, Susan Morrel-Samuels, who has directed many violence prevention projects, has noted an important point in regard to terminology in this context: “Gun violence” leads to less dissension than “gun control.” Most people, even gun owners, can cooperate and perhaps come to agreement if the issue is framed as gun violence rather than gun control ([Schaubn, 2013](#)). Therefore, gun violence rather than gun control framing should lead to less resistance among individuals lower on the neuroticism dimension and in states where residents tend to have lower average neuroticism levels.

## Limitations of the Present Study

A degree of caution is in order whenever extrapolations are made across levels of analysis. Such possible errors of inference have been described as the “ecological fallacy” by [Robinson \(1950\)](#) and the “compositional fallacy” by [Pettigrew \(1997\)](#). The first has to do with generalizing from the aggregate to the individual level; the second has to do with generalizing from the individual to the aggregate level. It has been assumed in the present work that the relations found at the state level stem from similar relations at the individual level. However, it is possible that the relations based on states as analytical units are independent of dynamics at the individual level.

Conventional wisdom in statistics suggests that the case-to-predictor ratio was not optimal for multiple regression analysis in the present study: A small sample size makes regression coefficients less stable and limits the number

of predictors that can be used because degrees of freedom are rapidly reduced for significance tests. However, such strategies with small samples have been successful in other contexts (e.g., [McCann, 1992, 1997, 2008](#)). Furthermore, inferential statistics estimate the degree of confidence in generalizing from a representative sample to a population but the sample of 50 states here is the full population of states, so such inference is not a pressing issue. The careful selection of potential predictors and the use of composites (e.g., SES) also minimized loss of degrees of freedom in the present study.

Of course, the common warning not to infer causation from correlation-based research applies to the present results. We cannot infer on the basis of the relations found here that it is the longstanding level of neuroticism in a state that has influenced the strength of state gun laws. However, it does not seem as likely that the strength of state gun laws is the primary cause of the differential distribution of resident neuroticism levels across the states. Furthermore, if a third unknown variable exists that has influenced both state resident neuroticism levels and state gun law strength to produce the relations found between neuroticism and gun law strength, such a variable has not been tapped by the state SES, white population percent, or urban percent variables controlled in the present analyses. Therefore, without further empirical research, the speculative view that state resident neuroticism may be implicated at the root seems most viable.

## Future Research

This is the first study to investigate relations between the Big Five personality dimensions and state gun control laws, so there are several possibilities for future research concerning these associations. For example, it would be beneficial to carry out research in which neuroticism and attitudes toward gun laws are directly assessed in sufficiently large and representative samples of the residents of each state to enable a state-level replication of the present results with an attitude measure as the criterion. To better understand whether the relations found at the state level are mirrored at the individual level and therefore potentially dependent on dynamics at the individual level, a replication relating neuroticism to gun law attitudes at the individual level in a large representative sample also is necessary. In addition, there are opportunities to research the validity of the five pathways ([Rentfrow et al., 2008](#)) through which various correlates of neuroticism relevant to state gun law strength come to be expressed at the state level, and, of course, there is much more empirical work to be carried out to perhaps validate the relation between neuroticism and gun law strength through the “fear” and “cultural” group channels speculated in the present article.

## Conclusion

In conclusion, lower state resident neuroticism has been demonstrated to be associated generally with conservatism and Republican Party preference ([McCann, 2014a, 2014b](#)). The present study sheds light specifically on the gun control controversy. This research has shown that lower state resident neuroticism is associated with weaker state gun laws, and that this link can account for similar associations involving weaker state gun laws, Republican leaning, and gun ownership.

## Notes

i) Some readers will notice that the first dynamic of Path E runs counter to the Five Factor Theory ([McCrae & Costa, 1996, 1999](#)) in that socialization plays a part in promoting higher or lower levels of a personality trait. Although many researchers have the view that personality is shaped by both environmental and genetic influences, especially cultural influences, and “that

though biological factors have an important role in shaping personality, they do not account for most of the variance" (Triandis & Suh, 2002, p. 135), Five Factor theorists maintain that "Five-Factor Theory is unique in asserting that traits have *only* biological bases. Cultures shape the expression of traits but not their levels" (Hofstede & McCrae, 2004, p. 74).

ii) This lower than usual correlation for state unemployment rates between 2000 and 2010 is understandable because the repercussions of the intervening major recession had much more of an impact on some states rather than others. However, the unemployment rate used in the computation of the composite SES score was the mean of the unemployment rates for 2000 and 2010, and with this mean rate as a constituent, Cronbach's alpha reliability remained at a high .86.

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The authors have declared that no competing interests exist.

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## References

- Adams, K. (1996). Guns and gun control. In T. J. Flanagan & D. R. Longmire (Eds.), *Americans view crime and justice: A national public opinion survey* (pp. 102-124). Thousand Oaks, CA, USA: Sage.
- Barbaranelli, C., Caprara, G. V., Vecchione, M., & Fraley, C. R. (2007). Voters' personality traits in presidential elections. *Personality and Individual Differences*, 42, 1199-1208. doi:10.1016/j.paid.2006.09.029
- Barlow, D. H., Ellard, K. K., Sauer-Zavala, S., Bullis, J. R., & Carl, J. R. (2014). The origins of neuroticism. *Perspectives on Psychological Science*, 9, 481-496. doi:10.1177/1745691614544528
- Bernard, M., & Lester, D. (1998). Attitudes toward gun control and personality. *Psychological Reports*, 82, 234. doi:10.2466/pr0.1998.82.1.234
- Bernie Sanders. (2014, October 23). *What will Bernie Sanders do?* Retrieved from <http://www.sanders.senate.gov/newsroom/recent-business/what-will-bernie-sanders-do>
- Blum, B. (2012, December 16). The future of gun control in the aftermath of Sandy Hook. *truthdig*. Retrieved from [http://www.truthdig.com/report/item/the\\_future\\_of\\_gun\\_control\\_in\\_the\\_aftermath\\_of\\_sandy\\_hook\\_2012121](http://www.truthdig.com/report/item/the_future_of_gun_control_in_the_aftermath_of_sandy_hook_2012121)
- BRFSS. (2001). *BRFSS survey results 2001 for nationwide*. Retrieved from <http://www.schs.state.nc.us/schs/brfss/2001/us/firearm3.html>
- Chen, X., Ender, P., Mitchell, M., & Wells, C. (2015). Chapter 2: Regression diagnostics. In *Regression with SPSS* (SPSS Web Books). Retrieved from Institute for Digital Research and Education UCLA website: <http://www.ats.ucla.edu/stat/spss/webbooks/reg/chapter2/spssreg2.htm>
- Celinska, K. (2007). Individualism and collectivism in America: The case of gun ownership and attitudes toward gun control. *Sociological Perspectives*, 50, 229-247. doi:10.1525/sop.2007.50.2.229
- Centre for Social Justice. (2007). *Key issues: Health inequality*. Retrieved from <http://www.socialjustice.org/index.php?page=health-inequality>

- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ, USA: Lawrence Erlbaum.
- U.S. House of Representatives. (2014). *Congress Profiles*. Retrieved from <http://history.house.gov/Congressional-Overview/Profiles/107th/>
- Costa, P. T., & McCrae, R. R. (1995). Domains and facets: Hierarchical personality assessment using the Revised NEO Personality Inventory. *Journal of Personality Assessment*, *64*, 21-50. doi:10.1207/s15327752jpa6401\_2
- de Vries, R., Gosling, S., & Potter, J. (2011). Income inequality and personality: Are less equal states less agreeable? *Social Science & Medicine*, *72*, 1978-1985. doi:10.1016/j.socscimed.2011.03.046
- Diener, E., & Kerber, K. W. (1979). Personality characteristics of American gun-owners. *The Journal of Social Psychology*, *107*, 227-238. doi:10.1080/00224545.1979.9922703
- Dixon, J., & Lizotte, A. J. (1987). Gun ownership and the "southern subculture of violence." *American Journal of Sociology*, *93*, 383-405. doi:10.1086/228749
- Fay, B. (2012). *Economic demographics of Republicans*. Retrieved from <http://www.debt.org/faqs/americans-in-debt/economic-demographics-republicans/>
- Fyhri, A., & Backer-Grøndahl, A. (2012). Personality and risk perception in transport. *Accident Analysis & Prevention*, *49*, 470-475. doi:10.1016/j.aap.2012.03.017
- Gerber, A. S., Huber, G. A., Doherty, D., Dowling, C. M., & Ha, S. E. (2010). Personality and political attitudes: Relationships across issue domains and political contexts. *American Political Science Review*, *104*, 111-133. doi:10.1017/S0003055410000031
- George, D., & Mallery, M. (2010). *SPSS for Windows step by step: A simple guide and reference*. Boston, MA, USA: Pearson.
- Gilbert, C. (2013, July 14). U.S. Congress: Partisan, polarized and unpopular. *Journal Sentinel*. Retrieved from <http://www.jsonline.com/news/statepolitics/us-congress-partisan-polarized-and-unpopular-b9953544z1-215454801.html>
- Glantz, L. H., & Annas, G. J. (2009). Handguns, health, and the second amendment. *The New England Journal of Medicine*, *360*, 2360-2365. doi:10.1056/NEJMhle0900209
- Goldberg, L. R. (1990). An alternative "description of personality:" The Big-Five factor structure. *Journal of Personality and Social Psychology*, *59*, 1216-1229. doi:10.1037/0022-3514.59.6.1216
- Gosling, S. D., Rentfrow, P. J., & Swann, W. B., Jr. (2003). A very brief measure of the Big-Five Personality domains. *Journal of Research in Personality*, *37*, 504-528. doi:10.1016/S0092-6566(03)00046-1
- Hofstede, G., & McCrae, R. R. (2004). Personality and culture revisited: Linking traits and dimensions of culture. *Cross-Cultural Research*, *38*, 52-88. doi:10.1177/1069397103259443
- John, O. P., & Srivastava, S. (1999). The Big Five Trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 102-139). New York, NY, USA: The Guilford Press.
- Jost, J. T., & Kay, A. (2010). Social justice: History, theory, and research. In S. T. Fiske, D. T. Gilbert, & L. Gardner (Eds.), *Handbook of social psychology* (5th ed., Vol. 2, pp. 1122-1165). Hoboken, NJ, USA: John Wiley & Sons.
- Klama, E. K., & Egan, V. (2011). The Big-Five, sense of control, mental health and fear of crime as contributory factors to attitudes towards punishment. *Personality and Individual Differences*, *51*, 613-617. doi:10.1016/j.paid.2011.05.028

- Kleck, G. (1996). Crime, culture conflict and the sources of support for gun control: A multilevel application of the General Social Surveys. *American Behavioral Scientist*, 39, 387-404. doi:10.1177/0002764296039004004
- Kleck, G., Gertz, M., & Bratton, J. (2009). Why do people support gun control? Alternative explanations of support for handgun bans. *Journal of Criminal Justice*, 37, 496-504. doi:10.1016/j.jcrimjus.2009.07.010
- Kron, J. (2012, November). Red state, blue city: How the urban-rural divide is splitting America. *The Atlantic*. Retrieved from <http://www.theatlantic.com/politics/archive/2012/11/red-state-blue-city-how-the-urban-rural-divide-is-splitting-america/265686/>
- Law Center to Prevent Gun Violence. (2014). *The Second Amendment*. Retrieved from <http://smartgunlaws.org/the-second-amendment/>
- Law Center to Prevent Gun Violence. (2010, July 1). *Gun laws matter: A comparison of state firearms laws and statistics*. Retrieved from <http://smartgunlaws.org/gun-laws-matter-a-comparison-of-state-firearms-laws-and-statistics/>
- Law Center to Prevent Gun Violence. (2013). *Methodology and state gun law values for 2010* [Provided through personal correspondence on September 20, 2013 by Laura Cutilletta, Senior Staff Attorney, Law Center to Prevent Gun Violence, 268 Bush Street #555, San Francisco, CA, USA ([www.smartgunlaws.org](http://www.smartgunlaws.org))].
- Leip, D. (2012). *Dave Leip's atlas of U.S. presidential elections*. Retrieved from [www.uselectionatlas.org](http://www.uselectionatlas.org)
- Lowry, R. (2012). Subchapter 3a: Partial correlation. In *Concepts and applications of inferential statistics*. Retrieved from [www.vassarstats.net/textbook/ch3a.html](http://www.vassarstats.net/textbook/ch3a.html)
- McCann, S. J. H. (1992). Alternative formulas to predict the greatness of U.S. presidents: Personological, situational, and zeitgeist factors. *Journal of Personality and Social Psychology*, 62, 469-479. doi:10.1037/0022-3514.62.3.469
- McCann, S. J. H. (1997). Threatening times, "strong" presidential popular vote winners, and the victory margin, 1824-1964. *Journal of Personality and Social Psychology*, 73, 160-170. doi:10.1037/0022-3514.73.1.160
- McCann, S. J. H. (2008). Societal threat, authoritarianism, conservatism, and U.S. state death penalty sentencing (1977-2004). *Journal of Personality and Social Psychology*, 94, 913-923. doi:10.1037/0022-3514.94.5.913
- McCann, S. J. H. (2010a). Subjective well-being, personality, demographic variables, and American state differences in smoking prevalence. *Nicotine & Tobacco Research*, 12, 895-904. doi:10.1093/ntr/ntq113
- McCann, S. J. H. (2010b). Suicide, Big Five personality factors, and depression at the American state level. *Archives of Suicide Research*, 14, 368-374. doi:10.1080/13811118.2010.524070
- McCann, S. J. H. (2011a). Emotional health and the Big Five personality factors at the American state level. *Journal of Happiness Studies*, 12, 547-560. doi:10.1007/s10902-010-9215-9
- McCann, S. J. H. (2011b). Conservatism, openness, and creativity: Patents granted to residents of American states. *Creativity Research Journal*, 23, 339-345. doi:10.1080/10400419.2011.621831
- McCann, S. J. H. (2014a). Big Five personality differences and political, social, and economic conservatism: An American state-level analysis. In P. J. Rentfrow (Ed.), *Geographical psychology: Exploring the interaction of environment and behaviour* (pp. 139-160). Washington, DC, USA: American Psychological Association.
- McCann, S. J. H. (2014b). Neuroticism and state differences in partisanship in the USA: Emotional stability, ideological orientation, and Republican preference. *Journal of Social and Political Psychology*, 2, 242-267. doi:10.5964/jspp.v2i1.309
- McCann, S. J. H. (2014c). Higher resident neuroticism is specifically associated with elevated state cancer and heart disease mortality rates in the United States. *SAGE Open*, 4. doi:10.1177/2158244014538268

- McCann, S. J. H. (2014d). Happy Twitter tweets are more likely in American states with lower levels of resident neuroticism. *Psychological Reports, 114*, 891-895. doi:10.2466/21.09.PR0.114k25w1
- McCann, S. J. H. (2015). Big Five personality and residential mobility: A state-level analysis of the USA. *The Journal of Social Psychology, 155*, 274-291. doi:10.1080/00224545.2015.1007027
- McCrae, R. R., & Costa, P. T. (1996). Toward a new generation of personality theories: Theoretical contexts for the five-factor model. In J. S. Wiggins (Ed.), *The five-factor model of personality: Theoretical perspectives* (pp. 51-87). New York, NY, USA: The Guilford Press.
- McCrae, R. R., & Costa, P. T., Jr. (1999). A five-factor theory of personality. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 139-153). New York, NY, USA: The Guilford Press.
- Miller, M., Barber, C., White, R. A., & Azrael, D. (2013). Firearms and suicide in the United States: Is risk independent of underlying suicidal behavior? *American Journal of Epidemiology, 178*, 946-955. doi:10.1093/aje/kwt197
- Mondak, J. J., & Halperin, K. D. (2008). A framework for the study of personality and political behavior. *British Journal of Political Science, 38*, 335-362. doi:10.1017/S0007123408000173
- Nelson, L. L., & Milburn, T. W. (1999). Relationships between problem-solving competencies and militaristic attitudes: Implications for peace education. *Peace and Conflict, 5*, 149-168. doi:10.1207/s15327949pac0502\_4
- Obschonka, M., Schmitt-Rodermund, E., Silbereisen, R. K., Gosling, S. D., & Potter, J. (2013). The regional distribution and correlates of an entrepreneurship-prone personality profile in the United States, Germany, and the United Kingdom: An ecological perspective. *Journal of Personality and Social Psychology, 105*, 104-122. doi:10.1037/a0032275
- Osborne, J. W. (2002). Notes on the use of data transformations. *Practical Assessment, Research & Evaluation, 8*(6). Retrieved from <http://PAREonline.net/getvn.asp?v=8&n=6>.
- Pesta, B. J., Bertsch, S., McDaniel, M. A., Mahoney, C. B., & Poznanski, P. J. (2012). Differential epidemiology: IQ, neuroticism, and chronic disease by the 50 U.S. states. *Intelligence, 40*, 107-114. doi:10.1016/j.intell.2012.01.011
- Peterson, I. (2014, March 20). Group seeks to "reframe" the gun violence debate to address racial disparities. *Twin Cities Daily Planet*. Retrieved from <http://www.tcdailyplanet.net/group-seeks-reframe-gun-violence-debate-address-racial-disparities/>
- Peterson, S. A., & Maiden, R. (1993). Personality and politics among older Americans: A rural case study. *International Journal of Aging & Human Development, 36*, 157-169. doi:10.2190/F01D-XTXD-5TXL-V4KQ
- Pew Research Center. (2010). *Gun rights and gun control – September 2010*. Retrieved from [pewresearch.org/files/old-assets/pdf/gun-control-2011.pdf](http://pewresearch.org/files/old-assets/pdf/gun-control-2011.pdf)
- Pettigrew, T. F. (1997). Personality and social structure: Social psychological contributions. In R. Hogan, J. A. Johnson, & S. R. Briggs (Eds.), *Handbook of personality psychology* (pp. 417-438). San Diego, CA, USA: Academic Press.
- PollingReport.com. (2014). *CBS News/New York Times poll, February 19-23, 2014*. Retrieved from <http://www.pollingreport.com/guns.htm>
- Price, J. H., Dake, J. A., & Thompson, A. J. (2002). Congressional voting behavior on firearm control legislation: 1993-2000. *Journal of Community Health, 27*, 419-432. doi:10.1023/A:1020601218452
- Physicians for Social Responsibility. (2015). *Violence prevention and social justice*. Retrieved from <http://www.psr.org/chapters/new-york/violence-prevention-and.html>
- Rentfrow, P. J. (2010). Statewide differences in personality: Toward a psychological geography of the United States. *The American Psychologist, 65*(6), 548-558. doi:10.1037/a0018194

- Rentfrow, P. J. (Ed.). (2014a). *Geographical psychology: Exploring the interaction of environment and behavior*. Washington, DC, USA: American Psychological Association.
- Rentfrow, P. J. (2014b). Geographical differences in personality. In P. J. Rentfrow (Ed.), *Geographical psychology: Exploring the interaction of environment and behaviour* (pp. 115-137). Washington, DC, USA: American Psychological Association.
- Rentfrow, P. J., Gosling, S. D., & Potter, J. (2008). A theory of the emergence, persistence, and expression of geographic variation in psychological characteristics. *Perspectives on Psychological Science*, 3, 339-369. doi:10.1111/j.1745-6924.2008.00084.x
- Rentfrow, P. J., Jost, J. T., Gosling, S. D., & Potter, J. (2009). Statewide differences in personality predict voting patterns in 1996-2004 U.S. presidential elections. In J. T. Jost, A. C. Kay, & H. Thorisdottir (Eds.), *Social and psychological bases of ideology and system justification* (pp. 314-347). Oxford, United Kingdom: Oxford University Press.
- Rentfrow, P. J., Mellander, C., & Florida, R. (2009). Happy states of America: A state-level analysis of psychological, economic, and social well-being. *Journal of Research in Personality*, 43, 1073-1082. doi:10.1016/j.jrp.2009.08.005
- Robinson, W. S. (1950). Ecological correlations and the behavior of individuals. *American Sociological Review*, 15, 351-357. doi:10.2307/2087176
- Ross, C. E. (2001). Neighborhoods and guns in Middle America. *Sociological Focus*, 34, 287-298. doi:10.1080/00380237.2001.10571200
- Schaubn (2013). *Social justice forum on gun control & violence*. Retrieved from <http://yvpc.sph.umich.edu/2013/02/23/social-justice-forum-gun-control-violence/>
- Schmidt, S. W., Shelley, M. C., II, Bardes, B. A., & Ford, L. E. (2014). *American government and politics today: 2013-2014 edition*. Boston, MA, USA: Wadsworth.
- Schoen, H., & Schumann, S. (2007). Personality traits, partisan attitudes, and voting behavior: Evidence from Germany. *Political Psychology*, 28, 471-498. doi:10.1111/j.1467-9221.2007.00582.x
- Silver, N. (2012, December 18). Party identity in a gun cabinet. *The New York Times*. Retrieved from [http://fivethirtyeight.blogs.nytimes.com/2012/12/18/in-gun-ownership-statistics-partisan-divide-is-sharp/?\\_php=true&\\_type=blogs&\\_r=0](http://fivethirtyeight.blogs.nytimes.com/2012/12/18/in-gun-ownership-statistics-partisan-divide-is-sharp/?_php=true&_type=blogs&_r=0)
- Smith, T. W. (2001). *2001 national gun policy survey of the National Opinion Research Center: Research findings*. Retrieved from [http://www.hawaii.edu/hivandaids/National\\_Gun\\_Policy\\_Survey\\_Research\\_Findings,\\_2001.pdf](http://www.hawaii.edu/hivandaids/National_Gun_Policy_Survey_Research_Findings,_2001.pdf)
- Triandis, H. C., & Suh, E. M. (2002). Cultural influences on personality. *Annual Review of Psychology*, 53, 133-160. doi:10.1146/annurev.psych.53.100901.135200
- Tushnet, M. (2008). Interpreting the right to bear arms—Gun regulation and constitutional law. *The New England Journal of Medicine*, 358, 1424-1426. doi:10.1056/NEJMp0801601
- UNC. (2008). *Partial correlation and suppressor variables*. Retrieved from <http://www.unc.edu/courses/2008spring/psyc/270/001/partials.html#pc4>
- U.S. Census Bureau. (2001). *Statistical Abstract of the United States*. Washington, DC, USA: U.S. Government Printing Office.
- U.S. Census Bureau. (2010). *2010 Census Urban and Rural Classification and Urban Area Criteria*. Retrieved from <http://www.census.gov/geo/www/ua/2010urbanruralclass.html>
- U.S. Census Bureau. (2012). *Statistical Abstract of the United States*. Washington, DC, USA: U.S. Government Printing Office.

- U.S. Senate. (2015). *Committees*. Retrieved from [http://www.senate.gov/committees/committees\\_home.htm](http://www.senate.gov/committees/committees_home.htm)
- Vernick, J. S. (2013). Carrying guns in public: Legal and public health implications. *The Journal of Law, Medicine & Ethics*, *41*, 84-87. doi:10.1111/jlme.12047
- Voracek, M. (2009). Big Five personality factors and suicide rates in the United States: A state-level analysis. *Perceptual and Motor Skills*, *109*, 208-212. doi:10.2466/pms.109.1.208-212
- White, D. (2012). *Gun owners as a percentage of each state's population*. Retrieved from <http://usliberals.about.com/od/Election2012Factors/a/Gun-Owners-As-Percentage-Of-Each-States-Population.htm>
- Wolpert, R. M., & Gimpel, J. G. (1998). Self-interest, symbolic politics, and public attitudes toward gun control. *Political Behavior*, *20*, 241-262. doi:10.1023/A:1024814624070

## Appendix

Table A1

State Scores for the 11 Variables in the Main Analyses of the Present Study

State	O	C	E	A	N	Party	Owner	SES	White	Urban
Alabama	-1.32	-.53	.22	-.27	-.26	.77	51.7	-1.15	69.80	57.22
Alaska	-1.37	-3.00	-1.63	-4.33	-1.20	1.32	57.8	.49	68.00	65.81
Arizona	-.02	1.06	-.03	-.06	-1.09	.38	31.1	-.58	74.25	89.01
Arkansas	.06	-.54	-.21	-.53	1.01	-.19	55.3	-1.15	78.50	54.33
California	1.05	-.13	-.57	.04	-.53	-.73	21.3	-.43	58.55	94.68
Colorado	.97	.69	-.19	.03	-1.97	-.07	34.7	.97	82.05	85.33
Connecticut	.65	-1.11	-.36	-.72	.54	-.88	16.7	1.47	79.60	87.85
Delaware	-.93	-.48	.15	-.29	.21	.32	25.5	.34	71.75	81.70
Florida	.59	1.11	.65	.55	-.50	.21	24.5	-.42	76.50	90.23
Georgia	.19	1.43	1.22	.87	-.39	.41	40.3	-.44	62.40	73.34
Hawaii	-1.28	-1.57	-.58	.17	-.74	-1.57	6.7	.64	24.50	91.72
Idaho	-.02	-.09	-1.22	-.45	-.36	1.38	55.3	-.41	90.05	68.49
Illinois	.17	.90	.80	.07	.21	-.59	20.2	.15	72.50	88.15
Indiana	-.18	.71	-.36	.38	.88	.44	39.1	-.37	85.90	71.62
Iowa	-.97	-.44	.45	.54	.15	.10	42.9	.49	92.60	62.56
Kansas	-.52	1.24	.56	.47	-.44	1.00	42.1	.48	84.95	72.80
Kentucky	-1.10	.37	-.41	.22	1.17	.85	47.7	-1.29	88.95	57.09
Louisiana	-.01	-.24	-.20	.55	1.14	.63	44.1	-1.06	63.25	72.90
Maine	-.22	-1.64	.64	-.86	.90	-1.23	40.5	.28	96.05	39.43
Maryland	.74	-.51	-1.99	-.42	.45	-.93	21.3	1.05	61.10	86.65
Massachusetts	1.20	-.75	-.81	-.51	.98	-1.68	12.6	1.25	82.45	91.69
Michigan	-.30	.21	.37	.69	-.09	-.30	38.4	-.40	79.55	74.63
Minnesota	-.67	.14	1.29	1.41	-.80	-.48	41.7	1.02	87.35	72.09
Mississippi	-.80	.79	.34	1.39	1.50	.21	55.3	-1.72	60.25	49.08
Missouri	-.04	.97	.35	.51	-.09	.12	41.7	-.17	83.85	69.92
Montana	.43	-.24	-.94	-.71	-.71	1.11	57.7	-.01	90.00	55.00
Nebraska	-1.07	1.15	1.71	.74	-1.00	1.43	38.6	.72	87.85	71.47
Nevada	.94	-.06	-.55	-1.41	-.83	-.16	33.8	-.78	70.70	92.85
New Hampshire	.58	-.82	-1.87	-.05	.70	.08	30.0	1.30	94.95	59.80

State	O	C	E	A	N	Party	Owner	SES	White	Urban
New Jersey	.49	-1.03	.54	-.17	1.47	-.54	12.3	1.01	70.60	94.54
New Mexico	.14	2.40	.15	-.17	-.20	-.31	34.8	-.89	67.60	76.22
New York	1.32	-.67	-.31	-.17	1.55	-1.11	18.0	.26	66.80	87.69
North Carolina	-.18	1.65	-.39	.98	-.06	.19	41.3	-.63	70.30	63.15
North Dakota	-3.12	.13	3.08	1.60	-.84	-.84	50.7	.49	91.20	57.90
Ohio	.12	-.56	-.05	.04	1.10	.03	32.4	-.27	83.85	77.66
Oklahoma	-.46	1.16	-.14	.86	-.15	1.23	42.9	-.30	74.20	65.77
Oregon	1.26	-.31	-1.10	.42	-1.27	-.81	39.8	-.14	85.10	79.87
Pennsylvania	.09	-.19	.60	-.21	1.22	-.22	34.7	.11	83.65	77.88
Rhode Island	.04	-1.55	-.61	-.84	1.61	-1.67	12.8	-.11	83.20	90.82
South Carolina	.09	.66	-.07	.36	.53	.59	42.3	-.89	66.70	63.42
South Dakota	-.61	.65	.97	.19	-1.68	.13	56.6	.52	87.30	54.28
Tennessee	.19	.72	-.19	1.08	.11	.20	43.9	-.81	78.90	65.00
Texas	.40	.42	.42	.12	-.17	.57	35.9	-.63	70.70	83.60
Utah	.28	1.36	.89	1.36	-2.52	1.36	43.9	.40	87.65	89.39
Vermont	.99	-.66	-1.22	.55	.43	-1.57	42.0	.89	96.05	38.55
Virginia	.71	-.58	-1.16	-.80	.18	.15	35.1	.94	70.45	74.23
Washington	1.20	-.07	-1.37	.19	-1.10	-.66	33.1	.48	79.55	83.25
West Virginia	.15	-.41	.06	-.15	2.36	-.06	55.4	-1.55	94.45	47.41
Wisconsin	-1.31	.29	2.14	1.32	-.45	-.32	44.4	.25	87.55	69.23
Wyoming	-1.80	-1.46	-.78	-1.44	-.59	1.74	59.7	.59	91.40	64.93

*Note.* O = Openness to Experience, C = Conscientiousness, E = Extraversion, A = Agreeableness, N = Neuroticism. See main text for further explanations and scoring.

Table A2

*Substantive Changes From the Original Results With the Non-Transformed Gun Law Variable as the Criterion*

Procedure	Changes when the original non-transformed gun law variable served as the criterion
Pearson correlation	correlation with conscientiousness changed from a non-significant $-.25$ to a significant $-.32$
Equation 1	$\beta$ for SES changed from a non-significant $.24$ to a significant $.31$ $\beta$ for white percent changed from a non-significant $-.22$ to a significant $-.29$ $\beta$ for agreeableness changed from a significant $.29$ to a non-significant $.19$
Equation 2	$\beta$ for white percent changed from a non-significant $-.17$ to a significant $-.24$
Equation 3	$\beta$ for white percent changed from a non-significant $-.18$ to a significant $-.25$ $\beta$ for party preference changed from a non-significant $-.17$ to a significant $-.25$
Equation 4	variance accounted for by party preference increased to 4.3%, $F(1, 44) = 7.19, p < .01$ $\beta$ for white percent changed from a non-significant $-.17$ to a significant $-.24$ $\beta$ for party preference changed from a non-significant $-.17$ to a significant $-.25$
Equation 5	$\beta$ for white percent changed from a non-significant $-.16$ to a significant $-.22$ $\beta$ for urban percent changed from a significant $.39$ to a non-significant $.29$
Equation 6	$\beta$ for white percent changed from a non-significant $-.16$ to a significant $-.22$ $\beta$ for urban percent changed from a significant $.39$ to a non-significant $.29$
Equation 7	$\beta$ for white percent changed from a non-significant $-.18$ to a significant $-.23$ $\beta$ for party preference changed from a non-significant $-.19$ to a significant $-.25$
Equation 8	variance accounted for by party preference and gun ownership increased to 4.3%, $F(2, 43) = 3.51, p < .05$ $\beta$ for white percent changed from a non-significant $-.18$ to a significant $-.23$ $\beta$ for party preference changed from a non-significant $-.19$ to a significant $-.25$