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Geopersonality of Preventable Death in the United States: Anger-Prone States and Opioid Deaths

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Abstract

Background: Opioid overdoses have reached epidemic levels in the United States and have clustered in Northeastern and "Rust Belt" states. Five Factor Model (FFM) personality traits also vary at the state level, with anger-prone traits clustered in the Northeast region. This study tested the hypothesis that state-level anger proneness would be associated with a greater increase in rates of opioid overdose death. **Methods:** This was a secondary analysis of state-level data on FFM traits, opioid overdose deaths, and other classes of preventable death. Robust mixed models tested whether change in rates of opioid overdose death from 2008 to 2016 was moderated by state-level anger proneness. **Results:** State-level anger proneness was significantly associated with greater increases in rates of opioid overdose deaths (B = 1.01, standard error = 0.19, $P < .001$, 95% confidence interval: 0.63-1.39). The slope of increase in opioid overdose death rates was 380% greater in anger-prone states and held after adjustment for potential confounders such as state-level prevalence of major depressive disorder, number of mental health facilities, and historical patterns of manufacturing decline. A similar pattern was observed between state-level anger proneness and benzodiazepine overdose deaths but was not significant for the latter after adjustment for potential confounders. **Conclusion:** These findings suggest that states characterized as more anger prone have experienced greater increases in opioid overdose deaths.

Keywords

opioid overdose, anger, geographical psychology, preventable death

In recent years, the United States has experienced an epidemic of opioid overdose deaths, attributable in part to the growing prevalence of chronic pain, combined with historical changes in opioid prescribing patterns, and patterns of diversion to illicit fentanyl, heroin, and other opioids.[1] Surveys suggest that a number of clinicians do not accept new patients who use opioids in an effort to avoid patient risks and professional liability.[2] In contrast, palliative care clinicians specialize in treating painful conditions with complex etiologies that may require opioid therapies. Opioid misuse is common, and even when used as prescribed many patients develop symptoms of tolerance and withdrawal. As such, palliative care clinicians often find themselves at the intersection of competing demands of effective pain management, evolving regulatory guidelines, and patient expectations of care. Discrepant views regarding the need for opioid therapies and their safe usage can be a source of anger and conflict in the patient–provider relationship.[3,4]

Although clinicians encounter patient anger in local clinics nationwide, epidemiological data suggest that anger regulation styles—and opioid death—tend to cluster geographically in the United States. In other words, some regions are angrier than others. This study tested the hypothesis that rates of opioid overdose deaths have increased more rapidly in US states where individuals on average tend to be more prone to angry and hostile responses to frustration. If supported, these regional differences in anger and hostility could provide an important

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cultural backdrop against which pain, substance use, and patient–physician conflict are discussed and managed in palliative care and other health-care settings.

Increases in opioid overdose death rates have been documented around the United States and have clustered in Midwestern, Appalachian, and Northern Atlantic states. These overdose deaths are linked to economic patterns, including manufacturing decline.[1] Personality traits, stable patterns in the ways that individuals think, behave, and emote, have also been found to cluster systematically across the United States.[5,6] These geographic differences in personality may have emergent and contextual influences on local and regional cultures and are associated with political, social, and health-care outcomes including health-care legislation and access to supportive care.[4,7,8] A state population's aggregate propensity toward anger may be of particular relevance to understanding why some states are disproportionately impacted by opioid overdose death. A state-level, opioid overdose rates could be *increasing* more rapidly over time in areas where frustration resulting from manufacturing job loss is experienced by a population with a greater aggregate propensity toward angry, irritable, hostile, and impulsive reactions to stress. In turn, this anger may translate to increased tension, emotional, and somatic pain that is escaped and avoided through misuse of opioids, and other health risk behaviors.[9-11] In clinical settings, anger and pain may intersect and manifest at times in patient–provider conflict.

Although anger and irritation are common and transient emotional states, individuals also differ in how they regulate their anger across situations. The Five Factor Model of personality defines anger regulation style as the intersection of 2 traits: high neuroticism and low agreeableness.[12] Neurotic individuals tend to be more negativistic, avoidant, and emotionally labile. Disagreeable individuals are prone toward mistrust. Anger-prone individuals, thus, often manage distress by externalizing blame, and may mistrust others, including their health-care providers.[13] Although these individuals tend to be more hostile, and verbally aggressive, they are not necessarily physically aggressive, and they may inhibit outright expression of their cynical worldviews.[14,15] They may be seen by others as tense, brooding, and unfriendly. This anger-prone personality contrasts with 3 other styles of anger management that are easy-going and forgiving, submissive, or dispassionately vengeful.

There are several reasons to hypothesize that increasing opioid overdose rates could be related to geographic variation in anger proneness. Longitudinal assessments and laboratory studies implicate poor anger regulation in the exacerbation of chronic back pain and social conflict.[16-18] Moreover, anger regulation styles are linked to the function of the endogenous opioid system and may modulate the response to exogenous opioid pain medications.[19] Thus, anger-prone individuals are more prone to experience somatic pain, and in turn, may be more likely to seek and utilize opioid medications, and require higher doses to obtain analgesic effects. Anger regulation styles might also impact opioid misuse because anger regulation styles modulate response to frustration and loss.[20] Individuals prone to anger tend to adopt problem-solving styles that focus on short-term and emotion-focused coping.[9,20,21] That is, dysfunctional regulation of anger may contribute to opioid abuse and heroin overdoses when individuals use the drugs and other substances to escape unpleasant thoughts and emotions.[9] Some limited support for this hypothesis comes from a study of individuals with sickle cell disease that found those who were prone to higher levels of negative emotions also tended to report greater use of opioids.[22] Daily diaries with patients with chronic low back pain have found that within-person increases in negative affect predict subsequent use of pain medications.[23] Neither study examined anger directly nor dispositional tendencies toward anger proneness. Nonetheless, anger may motivate some to utilize opioids to numb emotional experiences in addition to reducing somatic pain. It is possible that impulsive and hasty decision-making could lead some individuals to pursue illicit opioids when prescription opioids cannot be obtained. If anger-prone individuals are more likely to reside in certain states, rates of overdose death may have increased more rapidly in those states.

Anger plays a salient role in the experience of pain, but the question remains as to why anger regulation styles cluster geographically. While violent retaliation to specific insults may be sanctioned in some areas of the South, the Northeastern states are more inclined toward generalized irritable, impulsive, and disinhibited traits.[5,6,24] Rentfrow and colleagues point to several hypotheses that might explain the clustering of traits in such regions.[5,6] People with more agreeable traits may have relocated from the Northeast. A second possibility is that the historical pressures and challenges faced by America's original settler communities may have socialized the personality traits and problem-solving styles of these communities. Emotional contagion may have led individuals to elicit negative emotions in others around them. In more recent years, the Northeastern and "Rust Belt" states also tended to be more densely populated, and experienced economic decline when manufacturing careers left the region.[1] Thus, both distal and proximal cultural and economic trends could explain higher levels of frustration and anger in the "Rust Belt" region that may be linked to increasing rates of opioid overdose death.

Using publicly available data, this study tested the hypothesis that anger-prone states—defined as states with both above average aggregated scores on neuroticism, and below average aggregated scores on agreeableness—would experience more rapidly *increasing* rates of opioid overdose deaths from 2008 to 2016. These findings were compared to other causes of preventable death including benzodiazepine overdose, accidents, suicide, and homicide in order to ascertain whether state anger proneness conveys specific risk of opioid overdose death or preventable death in general.

Method

Procedure

Published data sets including Rentfrow and colleague personality norms were compiled in a common database that included

data from all 50 US states and the District of Columbia (N = 51). Data regarding opioid overdose deaths, benzodiazepine overdoses, homicide, suicide, and accidental deaths were obtained from the Centers for Disease Control Wonder Database. Data from each state were linked in a common database. All data were publicly available and de-identified. The Institutional Review Board at Central Michigan University deemed that these analyses did not constitute human subjects research.

Measures

Personality. Rentfrow and colleagues obtained personality data from 619 387 US adults who responded to the 44-item Big Five Inventory online between 1999 and 2005.[5,6] Descriptive statistics for the 5 facets of personality were provided for each US state and Washington DC.

Opioid overdose and preventable deaths. Data on opioid overdose deaths occurring in the years between 2008 and 2016 were gathered from the Kaiser Family Foundation and Centers for Disease Control Wonder Databases.[22,33] Mortality data were age-adjusted and reported as the number of deaths per 100 000 constituents.

Prescribing rates. Annual opioid prescribing rates from 2008 to 2016 were obtained via IQVIA Xponent and the Centers for Disease Control.[25] The data are based on a sample of N = 50 000 retail pharmacies which distribute 90% of retail prescriptions in the United States.

Demographic covariates. Region-level demographics were retrieved from the US Census Bureau's public database for the 2015 American Community Survey.[26] Population density was obtained from the 2010 Census.[27] The 2015 Gallup Daily Tracking survey was accessed to obtain an estimate of conservative advantage for each state.[22] Employment data including the yearly average rate of unemployment for each state was obtained from the United States Department of Labor, Bureau of Labor Statistics (BLS)' Current Population Survey.[28] The BLS also provided data on the decline in manufacturing jobs from 1981 to 2002. These data were used as an index of state manufacturing decline because they capture decline in manufacturing from the time near its historical peak, and before BLS definitions of manufacturing employment changed in 2003. The prevalence of major depressive disorder (2008-2009) was obtained from the SAMHSA National Survey on Drug Use and Health,[29] and the number of mental health treatment facilities per state (2010) was obtained from National Mental Health Services Survey.[30]

Analysis. Data were analyzed in *R* using the "robustlmm" package.[31] Descriptive statistics were computed to characterize the study variables. The 50 US States and Washington DC were categorized as anger prone if they were above the mean on neuroticism and below the mean on agreeableness when the assessments were conducted (1999-2005). Anger proneness was operationalized as the interaction of Neuroticism and Agreeableness. This yielded 13 anger-prone states that were compared against the remaining 37 states and Washington DC. Given that distributions of many behavioral phenomena fail to meet assumptions required for Ordinary Least Squares and Maximum Likelihood regression,[32] Robust Mixed Models were computed to assess change in rates of opioid overdose deaths and other preventable deaths over the period of 2008 to 2016. In the primary analysis, a linear term for time, a dichotomous term for anger proneness (0 = non-anger-prone state, 1 = anger-prone state), and an interaction term for time × anger proneness were entered into the model. Sensitivity analyses were conducted by treating the personality data as continuous (vs categorical) with a 3-way interaction of Time × Neuroticism × Agreeableness, and by including potential confounders that could explain the linkage between state anger proneness and increasing rates of opioid overdose deaths between 2008 and 2016.

Results

Average rates of opioid overdose death increased substantially from 2008 to 2016 such that the national opioid overdose death rate in 2016 was approximately 2 times higher than in 2008. The categorization of anger-prone states yielded 13 (25.5%) anger-prone states in the following order: Arkansas, Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Virginia, and West Virginia.

State Anger Proneness and Overdose Deaths

Results of the primary tests of the study hypothesis are presented in Table 1, and significant interactions are plotted in Figure 1 to facilitate interpretation. As hypothesized, a significant interaction was observed showing that rates of opioid overdose deaths increased more in anger-prone states (B = 1.01, standard error [SE] = 0.19, $P < .001$, 95% confidence interval [CI]: 0.63-1.39; see Figure 1 panel A). Regions of significance testing suggested that absolute differences in opioid overdose deaths between anger-prone and non-anger-prone states reached statistical significance in 2011.

Analyses also examined the specificity of the association of anger proneness with opioid-related deaths. A parallel of greater increase in rates of benzodiazepine overdose deaths in anger-prone states was also observed (B = 0.15, SE = 0.03 $P < .001$, 95% CI: 0.09-0.21, see Figure 1 panel B). Differences in rates of benzodiazepine overdose deaths reached significance in approximately 2013. In comparison to opioid and benzodiazepine overdose deaths, rates and rates of change of non-firearm homicides did not differ across anger-prone states (Figure 1 panel C). Firearm-related homicides were relatively stable in anger-prone states, whereas rates of firearm homicides increased in non-anger-prone states (Figure 1 panel D). Rates of accidental deaths occurred less frequently but increased more rapidly in anger-prone states (B = 0.90, SE = 0.12 $P = .001$, 95% CI: 0.67-1.13, see Figure 1 panel E). Suicides occurred less

Table 1. Opioid Overdose Deaths and Other Preventable Causes of Death.[a]

Variables Analyzed	B	SE	*P*	CI: 2.5%	CI: 97.5%
DV: opioid death					
Intercept	6.57	.63	<.001	5.34	7.81
Anger proneness	−1.14	1.25	.361	−3.58	1.30
Year	.36	.04	<.001	.28	.43
Anger proneness × year	1.01	.08	<.001	.86	1.16
DV: benzodiazepine death					
Intercept	1.78	.27	<.001	1.24	2.31
Anger proneness	.18	.50	.723	−.82	1.18
Year	.13	.02	<.001	.09	.16
Anger proneness × year	.15	.03	<.001	.09	.21
DV: suicide					
Intercept	13.68	.62	<.001	12.47	14.89
Anger proneness	−2.99	1.22	.014	−5.38	−.60
Year	.33	.02	<.001	.30	.37
Anger proneness × year	−.07	.04	.044	−.15	−.002
DV: firearm homicide					
Intercept	3.47	.35	<.001	2.78	4.16
Anger proneness	.11	.73	.878	−1.33	1.55
Year	.08	.01	<.001	.06	.11
Anger proneness × year	−.09	.03	.001	−.14	.03
DV: non-firearm homicide					
Intercept	1.97	.11	<.001	1.75	2.17
Anger proneness	−.28	.22	.210	−.71	.15
Year	−.04	.004	<.001	−.05	−.03
Anger proneness × year	.01	.01	.490	−.01	−.03
DV: accidents					
Intercept	43.70	1.49	<.001	39.78	45.62
Anger proneness	−9.70	2.95	.001	−15.49	−3.92
Year	.69	.06	<.001	.58	.82
Anger proneness × year	.90	.12	<.001	.67	1.13

Abbreviations: CI, confidence interval; DV, the dependent variable; SE, standard error.
[a]Anger proneness x year refers to an interaction term.

frequently in anger-prone states, but rates of suicide increased in both anger-prone and non-anger-prone states (Figure 1 panel F).

Decline of Manufacturing and Overdose Deaths

Given the concentration of manufacturing decline in many of the anger-prone states, models assessed if rates of opioid and benzodiazepine overdose deaths increased more rapidly in areas affected by manufacturing decline. Results supported this hypothesis, in that loss of manufacturing jobs over the years of 1981 to 2002 predicted increasing rates of both opioid (B = 0.36, SE = 0.04, $t = 10.22$, $P < .001$, 95% CI: 0.29-0.43) and benzodiazepine overdose deaths (B = 0.07, SE = 0.01, $t = 5.95$, $P < .001$, 95% CI: 0.05-0.10) over the years of 2008 to 2016.

Covariate and Sensitivity Analysis

Given that 11 of the 13 identified anger-prone states were found in the Northeast, the 2 remaining states, Arkansas and West Virginia, were compared to non-anger-prone states. Arkansas and West Virginia had significantly greater rates of opioid overdose death (B = 8.26, SE = 2.87, $t = 2.89$, $P = .004$, 95% CI: 2.63-13.89) and benzodiazepine overdose deaths (B = 8.00, SE = 1.24, $t = 6.45$, $P = <.001$, 95% CI: 5.58-10.43) compared to non-anger-prone states. While the intercepts of overall levels of overdose deaths were higher in these states, the interaction effects indicated that the rates of overdose *did not increase* significantly more in these 2 states compared to the non-anger-prone states. The final model predicting opioid overdose also included the personality traits of extroversion, agreeableness, conscientiousness, yearly opioid prescription rates for each state, number of mental health facilities, and state prevalence of depressive disorders (see Table 2). In this adjusted model, unemployment (B = −0.17, SE = 0.06, $t = -3.02$, $P = 0.003$, 95% CI: −0.27 to −0.06), and yearly opioid prescribing rates were associated with fewer opioid overdose deaths (B = −0.08, SE = 0.02, $t = -4.96$, $P < 0.001$, 95% CI: = −0.11 to −0.05). Anger proneness and time significantly interacted to predict opioid overdose death (B = 0.78, SE = 0.22, $t = 3.55$, $P < .001$, 95% CI: 0.35-1.22). The shape of this interaction when plotted was similar to the graph depicted in Figure 1 panel A, such that the rate of opioid overdose deaths increased more in anger-prone states. Table 3 presents findings from an adjusted model predicting benzodiazepine overdose deaths. The interaction of Anger proneness and time in predicting benzodiazepine overdose deaths was attenuated after adjustment for potential confounders.

Analysis of the sensitivity of the results replaced the dichotomous term for anger proneness with a 3-way interaction of agreeableness, neuroticism, and time. The models included all previously described covariates, and the 3-way interaction terms were significant in that both rates of opioid and benzodiazepine overdose deaths were highest in 2016 in states that were low in agreeableness and high in Neuroticism.

Discussion

Rates of opioid overdose deaths have increased over 3 times faster in US states where people are, on average, more prone to experiencing difficulties regulating their anger. A similar, although weaker and less consistent pattern was found with benzodiazepine overdose deaths. Exploration of other causes of preventable deaths indicated that living in an anger-prone state conveyed risk specifically for overdose death, and this association held after adjustment for plausible confounders. The association of anger proneness with benzodiazepine overdose deaths was attenuated somewhat after accounting for these factors. It is notable that yearly state-level opioid prescribing rates were associated with fewer opioid overdose deaths in the final model, potentially reflecting the evolving nature of the opioid crisis in which illicit and synthetic opioids are being abused.[1,2] The current study suggests that regional variation in anger regulation is an important cultural backdrop for understanding why opioids are misused.

This pattern of findings contextualizes the opioid epidemic as a costly phenomenon that has impacted lives across the

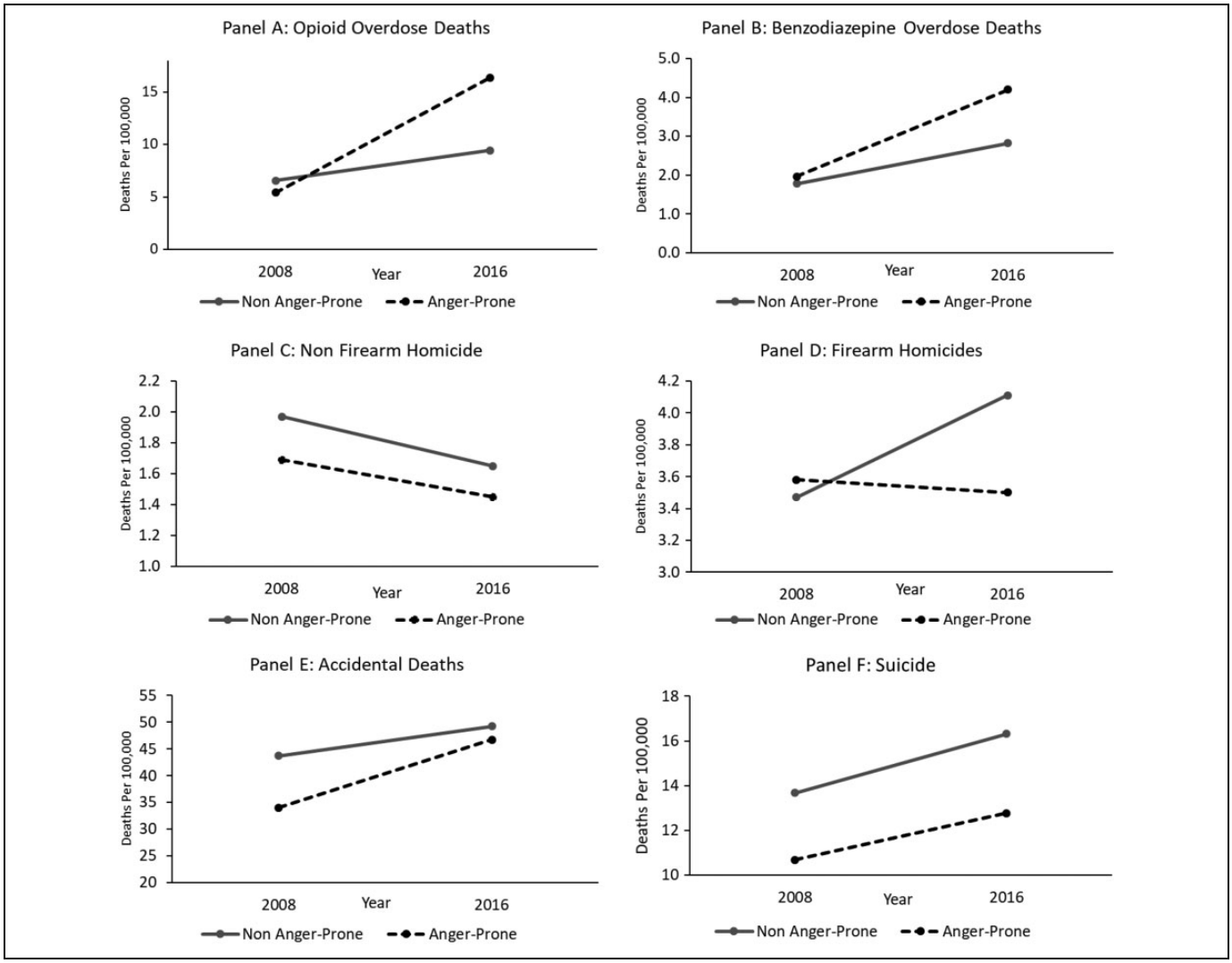

Figure 1. Change in opioid overdose deaths and other preventable deaths in anger-prone and non-anger-prone states.

nation, but particularly in regions with aggregate personality profiles marked by a propensity toward anger. A number of questions remain about the mechanisms by which a population's propensity toward anger translates to increasing risks for overdose deaths by opioid or benzodiazepines but not risk of other preventable causes of death. Individuals prone to anger and hostility are at risk of increased levels of chronic pain and tend to manage such pain with greater difficulty. Similarly, individuals with higher levels of anger proneness are more likely to engage in health risk behaviors such as alcohol use and smoking.[10,33,34] In laboratory tasks, individuals prone to excessive anger expression demonstrate altered endogenous opioid function and may require higher levels of exogenous opioids to obtain desired analgesic effects.[18,19] Carpenter and colleagues have argued that use of opioids may be reinforced by offering an escape from pain and emotional distress.[23] As a result of these processes, some individuals may be more prone to use opioids to excessive levels. Individuals prone to anger also experience greater difficulty interfacing with the health-care system.[13,35] Clinical anecdote is ripe with examples of patients becoming belligerent with clinicians who limit or deny requests for opioids and analgesics. Defensive hostility and anger, while less flagrant, may also convey health risks.[15] A substantial concern among clinicians is that patients will seek out other sources internal or external to the health-care system to obtain opioids. In addition to overdose death, it is plausible that anger could play a role in a number of classes of preventable death if anger sufficiently disinhibits individuals enough to harm themselves (ie, suicide), harm others (ie, homicide), abuse other medications such as benzodiazepines, or simply make rash decisions that contribute to accidental death. Between 2008 and 2016, suicide rates steadily increased by 17% from 11.85 to 13.92 deaths per 100 000. Although rates increased similarly across anger-prone and non-anger-prone states, rates of suicide have been consistently lower in anger-prone states. Over the same period, overall homicide rates increased 2% from 5.86 to 5.99 deaths per 100 000, and non-firearm homicides decreased by 22% from 1.86 to 1.53 deaths

Table 2. Adjusted Model Predicting Opioid Overdose Deaths. [a]

Variables Analyzed	B	SE	*t*	*P*	95% Confidence Interval	
					Lower	Upper
Intercept	39.85	48.34	.82	.410	−54.89	134.60
Extraversion	−1.45	.82	−1.77	.077	−3.06	.16
Conscientiousness	1.29	.90	1.43	.154	−.48	3.05
Openness	.34	1.00	.34	.731	−1.62	2.30
Yearly unemployment	−.17	.06	−3.02	.003	−.27	−.06
Population density	.00	.00	−.07	.942	.00	.00
Conservative advantage	.13	.07	1.95	.051	.00	.27
Percentage female	−1.00	1.07	−.94	.350	−3.09	1.09
Median age	.24	.31	.80	.424	−.35	.84
Mental health facilities	.00	.00	.01	.991	-.01	.01
Yearly opioid prescription rate	−.08	.02	−4.96	.000	−.11	−.05
Depression prevalence	1.97	.77	2.58	.010	.47	3.47
Year (2008-2016)	.33	.10	3.19	.001	.13	.54
Manufacturing decline	−.66	.78	−.85	.395	−2.19	.86
Year × manufacturing decline	.16	.10	1.64	.100	−.03	.35
Anger proneness	.36	1.82	.20	.841	−3.20	3.93
Year × anger proneness	.78	.22	3.55	.000	.35	1.22

Abbreviation: SE, standard error.
[a]DV = Anger proneness × year refers to an interaction term.

Table 3. Adjusted Model Predicting Benzodiazepine Overdose Deaths. [a]

Variables Analyzed	B	SE	*t*	*P*	CI: 2.5%	97.50%
Intercept	32.33	17.86	1.81	.070	−2.678	67.329
Population density	.00	.00	1.22	.224	−.001	.004
Yearly unemployment	−.01	.02	−.27	.787	−.054	.041
Conservative leaning	.05	.03	1.76	.079	−.006	.111
Median age	.23	.12	1.90	.058	−.008	.475
Percent female	−.80	.40	−2.02	.043	−1.580	−.025
Year (2008-2010)	.14	.02	7.37	<.001	.103	.177
Manufacturing decline	−.45	.26	−1.73	.083	−.956	.059
Manufacturing decline x year	.06	.01	4.50	<.001	.036	.091
Anger proneness	.43	.68	.63	.532	−.912	1.766
Anger proneness x year	.06	.03	1.73	.084	−.008	.124

Abbreviations: CI, confidence interval; SE, standard error.
[a]DV = Anger proneness × year refers to an interaction term.

per 100 000.[23] In this current analysis, anger-prone states tended to have more stable rates of firearm-related homicide deaths, whereas other states experienced increases in rates of firearm death. This finding may relate in part to stricter gun laws in more liberal-leaning Northeastern states.

While the data on opioid overdoses are longitudinal in nature, this is a descriptive study, the personality data were cross-sectional, and causality cannot be assumed. State differences in anger proneness could be a reflection of a multitude of systemic and demographic variables. However, adjustment for these factors did not explain the association between anger proneness and the increasing rate of opioid death. As with all observational studies, there is a risk that associations between anger proneness and opioid overdose rates are explained by other unmeasured confounds. Interpretations that risk the ecological fallacy should also be avoided. While theory and research support the conceptualization that anger plays an important role in pain regulation, not all individuals at risk of overdose are "angry" people. Likewise, the behavioral manifestation of angry and hostile traits may depend on the presence of other traits such as defensiveness.[15] Additional research is needed to determine the extent to which state-level anger proneness is stable across time and predictive of other health behavior phenomena. It may be the case that different state-level traits may confer risks for in different outcomes in different sociohistorical circumstances and in differently health policy environments. The CDC data on causes of death are imperfect, and it is often difficult to classify cause of death when multiple factors contributed to an individual's death. Lastly, some data were collected during different time periods. In general, lengthier time lags between assessments are expected to diminish or obscure associations between phenomena. In the current study, however, the association was observable across the span of several years. In addition, the measurement of anger proneness prior to changes in opioid overdose deaths helps to rule out the possibility that opioid overdose deaths contributed to state-level anger proneness.

The findings of this analysis have implications for public health, primary care, and specialty palliative care efforts to address the opioid epidemic. Health behavior phenomena including response to health behavior interventions may depend on local cultural norms.[36] Special attention may be warranted to gain the trust and buy-in of those who may be prone toward anger, sensitive to frustration and alienation, and

prone to hostile reactivity toward stress. At this stage, further research and attention to anger in pain management settings are warranted. Public health and messaging campaigns may consider the possibility of tailoring messages to validate the frustrations of the communities they aim to support through this opioid epidemic.

Clinicians working in anger-prone regions might find that conflict and hostile reactions are more frequent in their day-to-day practice. While efficacious psychological treatments for anger are available for patients with clinically significant concerns, a more feasible approach may be to strengthen clinician training in conflict management and social problem-solving particularly in the context of pain and opioid therapy. Clinicians may vary in their knowledge and skill in managing conflict and anger in the patient–provider relationship. Rote knowledge of communication strategies and limit setting may not translate to better skills in emotionally charged interactions. Therefore, more work is needed to help clinicians effectively attend to patients' expressions of frustration and anger. This training could include strategies for providing validation to patients and engaging in problem-solving around underlying and unmet needs.[37] Palliative care clinicians may also benefit from deliberate practice in setting safe boundaries around opioid therapies[38] and establishing screening practices to monitor opioid use.[39] The current study suggests that awareness of and attention to regional differences in anger expression and regulation could help clinicians respond in more effective ways to patient concerns and conflict.

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