

# Military Attitudes on the Chemical Weapons Taboo: Evidence from the Pacific Theater

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## Abstract

Little is known about military attitudes toward weapons taboos, or the durability of non-use norms in wartime. Chemical weapons are a key case given public revulsion and clear international prohibitions. We explore soldiers' attitudes in a salient setting: the Pacific theater of World War II. We draw on a declassified survey covering a representative sample of enlisted US soldiers in Hawai'i in 1944. This unique context, during a total war against an adversary that had employed chemical weapons, represents a hard test for the chemical weapons taboo. Up to 91% of soldiers supported using chemical weapons against Japan, including 24% who favored initiation and 67% who favored retaliatory use. To understand the influence of military instruction, we exploit a novel regimen still used in basic training, which saw some troops exposed to lachrymatory gas. We find exposure to chemical weapons in training reduced support for use. Visceral experiences can mobilize support for weapons taboos in otherwise permissive environments.

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Canonical studies hold that the use of weapons of mass destruction (WMDs)—biological, chemical, and nuclear weapons—is taboo (Price, 1997; Tannenwald, 1999). Growing research examines mass attitudes on these non-use norms, but existing evidence is mixed. The public opposes use when presented with realistic scenarios that highlight ethical, legal, and humanitarian consequences of WMDs (Carpenter and Montgomery, 2020; Koch and Wells, 2021). During crises, public opposition and reputational concerns have constrained policymakers contemplating norm violations (Brown, 1968).<sup>1</sup> Yet, elites and members of the public may support violating weapons taboos when doing so confers military advantages or preserves other core values (Dolan, 2013; Press, Sagan and Valentino, 2013; Rathbun and Stein, 2020), calling into question the robustness of non-use norms.<sup>2</sup>

In this research note, we intervene in the debate over weapons taboos by focusing on chemical weapons, against which there is particular revulsion (Smetana and Vranka, 2021). Theoretically, we develop and explain how salient personal experiences are an important source of support for non-use norms. Our contention builds on psychological accounts of political preference formation (Jervis, 1976); historical accounts of the taboo's emergence, which emphasize how elites' experiences with the horrors of gas in World War I (WWI) catalyzed support for non-use (Brown, 1968; Moon, 1984); and evidence on the role of vivid information (Carpenter and Montgomery, 2020; Koch and Wells, 2021) in galvanizing pro-normative attitudes.

Empirically, we draw on a declassified survey fielded by the War Department on a representative sample of 648 enlisted US soldiers in the Central Pacific theater in October 1944.<sup>3</sup> The survey offers a unique opportunity to understand soldiers' attitudes around chemical weapons use in a wartime setting. Respondents were sampled at different stages of training. Notably, some were exposed to noxious gas in a controlled environment just prior to survey fielding. This setting allows us to assess the impact of direct experiences with chemical weapons on attitudes toward use. Consistent with our theory about the role of personal experiences, we find that respondents briefly exposed to chemical irritants were substantially less supportive of using chemical weapons against Japan.

Overall, this article contributes to the study of politics in three ways. First, we present novel evidence on *military attitudes* toward non-use norms. Mass opinion is undoubtedly important for understanding the strength of weapons taboos. However, military officials wield significant influence on foreign policymaking (Jost and Kertzer, 2021), particularly during crises (Moon, 1984). This makes it imperative to understand the views of servicemembers. Existing studies emphasize the perspectives of select military elites (Dolan, 2013), but offer little evidence on how enlisted soldiers think about non-use. Koch and Wells's (2021) finding that veterans are more tolerant of civilian casualties in conventional war raises questions about whether military service bolsters counternormative attitudes on WMDs. To the best of our knowledge, ours is the first paper to quantitatively

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<sup>1</sup>Soldiers are sensitive to public opinion (Lin-Greenberg, 2021).

<sup>2</sup>Section A-1 reviews literature on non-use norms and elite-public attitudinal gaps.

<sup>3</sup>Enlisted soldiers were inducted into the Army rather than commissioned. We do not observe whether respondents were inducted by conscription or volunteering. However, most US soldiers in this era (61%) were drafted, and so should resemble the general population.

examine how enlisted servicemembers view the chemical weapons taboo.

Second, we explore the durability of the chemical weapons taboo in a real-world, wartime setting, when US forces faced a great power adversary, and soldiers may have believed that chemical weapons could confer genuine tactical advantages. Contemporary survey experiments explore attitudes on WMD taboos in hypothetical scenarios. These studies are useful for testing causal mechanisms underpinning pro- and counternormative opinions, but they offer less evidence on the durability of weapons taboos in permissive environments, when the threat of actual WMD use is high. In our setting, high levels of respondent support for use attenuate standard concerns about social desirability bias leading direct-question surveys to overstate pro-normative attitudes (Blair, Chu and Schwartz, 2022). By examining attitudes around non-use in the midst of a major war, we gain leverage over questions about the robustness of the chemical weapons taboo in a hard case.

Third, we present evidence for a model of attitude formation based on visceral personal experiences. Our argument builds on political psychological research on the microfoundations of non-use norms (Dolan, 2013; Rathbun and Stein, 2020). Existing explanations for attitudes around weapons taboos emphasize competing moral foundations, value trade-offs, information asymmetries, and other perceptual factors (Press, Sagan and Valentino, 2013; Carpenter and Montgomery, 2020; Smetana and Vranka, 2021; Smetana, Vranka and Rosendorf, 2023). Our argument and results harken to earlier qualitative accounts of the emergence of the chemical weapons taboo, which emphasize the horrifying personal experiences of policymakers with gas warfare in WWI (Brown, 1968).<sup>4</sup> We offer direct evidence of how brief exposure to chemical weapons can reduce support for use.

## **The Political Impact of Personal Experiences**

Theories emphasizing the role of personal experiences in motivating subsequent political attitudes have a long tradition in psychology and international relations. As Jervis (1976, p. 240) argued: “events seen and participated in leave disproportionate impressions.” Personal experiences are central drivers of political beliefs and behaviors because they structure the ways individuals process information, and guide the formation of self-conceptions, moral values, self-efficacy beliefs, and risk propensity (Jervis, 1976). Firsthand experiences also produce politically-relevant, emotionally-evocative memories and perceptions (Horowitz, Stam and Ellis, 2015). Building on this theoretical foundation and historical accounts about the legacies of exposure to gas warfare in WWI, we outline how personal experiences shape preference formation.

Personal experiences with WMDs represent a powerful source of support for non-use. Firsthand exposure to normatively proscribed weapons provides *personalized information* about the intense physical and psychological consequences of their use. Unlike more abstract sources of information, personalized information—that acquired from direct experiences during important events—is concrete, emotive, interesting, and realistic (Jervis,

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<sup>4</sup>Moon (1984) cites his experience witnessing gas at Belleau Wood in 1918 as a key reason General Pershing opposed using chemical weapons after WWI.

1976). In the presence of competing stimuli, personalized information is also hierarchically dominant, meaning it is more likely to affect judgements than less evocative inputs (Feldman and Sigelman, 1985).

Testimony from survivors of the Hiroshima bombing corroborates the personal nature of information derived from exposure to WMDs. Whereas survey respondents describing hypothetical cases of nuclear use focus on abstract consequences, Hiroshima survivors detail the toll of nuclear weapons in expressive, unambiguous language centered on human misery (Lifton, 1968). “The Day After,” a docudrama about nuclear war that aired in 1983, inspired fear of nuclear weapons and increased antinuclear activism because it was evocative, convincing some viewers they were watching the news (Feldman and Sigelman, 1985). In the realm of chemical weapons, evidence shows that individuals exposed during WWI, the Iran-Iraq War, and the Gulf War displayed higher levels of anxiety, depression, and somatization for decades afterwards (Volans and Karalliedde, 2002). Merely wearing chemical protective gear can increase anxiety among soldiers, and troops engaged in chemical warfare drills report heightened irritability, antisociality, and withdrawal (Brown, 2009). Multiple exposure to chemical warfare training increases the likelihood of short-term, psychological symptoms. Building on psychological accounts about the importance of personalized information and this initial evidence on the salience of personal experiences with WMDs, we hypothesize:

***H*<sub>1</sub>: Exposure to chemical weapons reduces support for their use.**

Our theory about the role of personalized information extends existing models that emphasize how vivid information can bolster pro-normative attitudes (Carpenter and Montgomery, 2020; Koch and Wells, 2021). In this scholarship, information remains abstract because it is revealed via textual primes in hypothetical vignettes. We build on this work by emphasizing the importance of *salient, firsthand experiences*, bridging research in political psychology with historical accounts about the origins of the chemical weapons taboo.

## **Survey S-175: Chemical Warfare Training**

To study soldiers attitudes on the chemical weapons taboo, we draw on a declassified survey—dubbed S-175—from *The American Soldier in World War II* (ASWW2) family (Stouffer et al., 1949). The Research Branch of the US War Department fielded ASWW2 surveys between 1941 and 1945, with the aim of understanding morale, discipline, and combat motivation. To this end, at least 200 different surveys were administered to 500,000 US servicemembers across ranks, theaters, and branches.<sup>5</sup> S-175 is the only available survey from the ASWW2 collection that addresses troops’ attitudes toward chemical weapons.

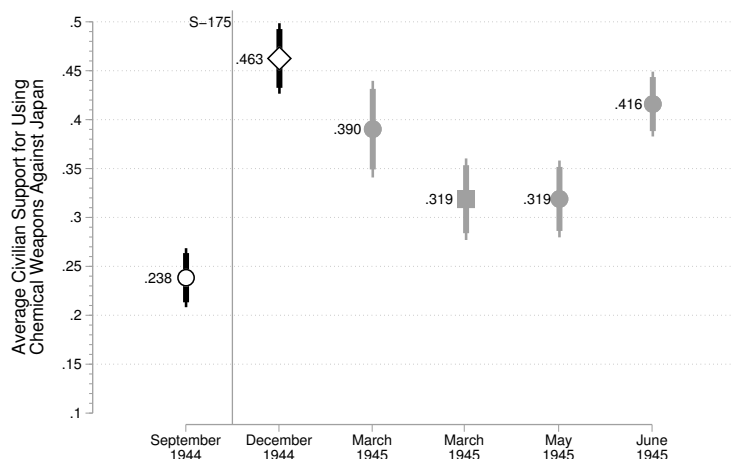
The survey was fielded in October 1944, just before the Battle of Leyte, and around the time American military planners, like Generals George Marshall and Joseph Stillwell, began contemplating using chemical weapons against Japan (Brown, 1968; Dolan, 2013). President Roosevelt was staunchly committed to no first-use, and declared that the US military would only use chemical weapons for battlefield retaliation in-kind. Yet, public opinion

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<sup>5</sup>Section A-2 describes the ASWW2 collection of surveys.

was increasingly favorable, and military officials believed attitudes could be swayed to support use (Moon, 1984). A series of Gallup polls fielded between September 1944 and June 1945 found that mass support for using chemical weapons against Japan ranged between 24 and 46% depending on how the question was framed (Figure 1).<sup>6</sup> A 10pp increase in public support during the Battle of Okinawa (May-June 1945) highlights the malleability of public opinion, and suggests attitudes tracked wartime developments.

Figure 1: Civilian Support for Chemical Weapons Use Against Japan



*Note:* Plots show the percentage of civilian respondents supporting chemical weapons use against Japan in six distinct samples surveyed by Gallup between September 1944 and June 1945. Bars are 90 and 95% confidence intervals based on state-clustered standard errors. Circles denote a question framed as using chemical weapons to save American lives and expedite the end of the war. Diamonds denote a question framed as using chemical weapons to punish Japan for violations of the laws of war. Squares denote a question framed as using chemical weapons without a specific purpose mentioned. Black and white markers reflect a question framed as using chemical weapons against Japanese civilians. Gray markers reflect a question framed as using chemical weapons against the Japanese military. The vertical gray line denotes when the S-175 survey was fielded.

The S-175 sample includes 648 white and Black enlisted men across 19 Army Air Force (AAF) units at five airbases in the Central Pacific theater.<sup>7</sup> Sampling occurred in two-stages. First, units were selected through quota sampling at theater headquarters. Stratification ensured sampled units represented the focal population in terms of branch and unit type.<sup>8</sup> Following stratified unit sampling, systematic random sampling was used to select respondents from a duty roster. For questionnaire administration, randomly selected individuals were ordered by unit commanders to assemble and complete anonymous written surveys.<sup>9</sup> Interviewers and subjects

<sup>6</sup>Questions do not allow us to distinguish support for first- (initiation) versus second-use (retaliation).

<sup>7</sup>Archivists did not preserve respondent race or the list of units in the sample when the survey was digitized in December 1979. We know sampled units were attached to the VI Air Service Area Command in Oahu, Hawai'i. These units were responsible for AAF supply, maintenance, and logistics; hence, respondents served in non-combat roles. In Table A-16 we find heterogeneous effects of gas exposure among respondents potentially exposed to combat because they were deployed in Oahu during the Pearl Harbor attack.

<sup>8</sup>The focal population was the cross-section of enlisted men in a theater. Survey administrators had access to the latest secret data on troop strength, unit locations, and demographics. Strictly random sampling was not possible given time and personnel constraints.

<sup>9</sup>It is not clear whether soldiers could refuse survey participation. ASWW2 records do not mention informed consent, which emerged as a human-subjects research norm in 1948, pursuant to the Nuremberg Code. Given

were matched on race and enlistment status, and respondents who expressed comprehension difficulty were given oral interviews. Sampling experts verified representativeness along key dimensions like rank, age, and length of service. Table A-1 shows sample demographics correspond to the demographics of the WWII-era U.S. military.<sup>10</sup>

Apart from offering a novel glimpse into military attitudes around chemical weapons during WWII, S-175 offers a unique chance to test the political consequences of a standard military training regimen: exposure to chemical irritants in a controlled environment. The sample included units enrolled in two different chemical warfare training courses (section A-4). The first program saw soldiers required to wear gas masks during normal duties for at least 30 minutes per week. The intent of this exercise was to make troops comfortable with their chemical protective gear. The second training program was more intensive, and exposed soldiers directly to chemical irritants. Specifically, troops were subjected to a simulated gas attack in a purpose-built chamber at least once per month. During this exercise, troops were forced to enter a room full of burning tear gas, test their gas masks, and then remove their masks and experience the effects of the chemical irritant.<sup>11</sup> A version of this regimen is still used in basic training for the U.S. military today (section A-4).<sup>12</sup>

## Empirical Strategy

To understand the effect of these military training regimens on attitudes toward chemical weapons use against Japan, we estimate a series of linear probability models of the following form:

$$Y_{i,b} = \beta_1(\text{Gas Exposure}_{i,b}) + \beta_2(\text{Gas Mask}_{i,b}) + \beta_3(X_{i,b}) + \epsilon_{i,b}$$

where  $Y_{i,b}$  is support for chemical weapons use of individual  $i$  at airbase  $b$ .

**Dependent Variable** To measure this outcome, we study a direct-response question: “What do you think we should do about using gas against the Japanese in this war?” In our main estimations, support for use is an indicator variable coded as 1 for respondents who supported first-use (“We should use gas now and take [them] by surprise”) or retaliatory, second-use (“We should not use gas unless [they] do first”) against Japan, and 0 otherwise. We pool support for first- and second-use because both imply transgression of the chemical weapons taboo, which is a universal proscription and was understood as such by WWII-era arms control advocates (Brown, 1968, p. 120-125).<sup>13</sup> Hence, our quantity of interest captures progressive, pro-normative shifts from extreme (i.e., support

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this context, and the care enumerators devoted to known survey administration issues, we believe this survey remains consistent with modern minimal risk standards.

<sup>10</sup>Results are robust to the inclusion of entropy weights to correct for imbalances (Table A-8).

<sup>11</sup>Gas exercises involved lachrymatory agents like CN or CS gas. In a few rare cases, troops were exposed to low doses of mustard or Lewisite gas. Standard tests bore no long-term health consequences (Brown, 2009).

<sup>12</sup>In addition to gas exposure, soldiers in this regimen were instructed on chemical warfare subjects during orientation meetings. To isolate the impact of gas exposure we control for orientation instruction with information access covariates (columns 5-8 of Table 1).

<sup>13</sup>For instance, in 1933 President Roosevelt and the State Department supported a British-sponsored international agreement that barred chemical *initiation* and *retaliation* (Brown, 1968, p. 120-121). Similarly, during WWII Lieutenant General Lesley McNair, the Commanding General of Army Ground Forces, was “adamantly opposed”



for first-use) and moderate (i.e., support for second-use) counternormative attitudes. Pooling support for first- and second-use also makes a clearer test for our theory since U.S. declaratory policy during WWII advocated second-use to deter Axis initiation (Dolan, 2013). By pooling support we ensure that observed effects of the training program we study reflect soldiers' adoption of pro-normative attitudes rather than mere adoption of pro-doctrinal attitudes.<sup>14</sup> In supplemental tests we use multinomial logistic regression (Table A-6) to separately estimate the relative probabilities of our different outcomes—support for first- and second-use versus non-use.

**Independent Variables and Covariates** Our core independent variables are: Gas Exposure<sub>*i,b*</sub>, the number of times a respondent had been exposed to chemical irritants in training in the prior three months; and Gas Mask<sub>*i,b*</sub>, the number of times a respondent had to wear a gas mask during normal duties in the prior four weeks.  $X_{i,b}$  is a vector of covariates that varies across specifications, but includes individual-level covariates like age, education, rank, and time deployed, as well as perceptual variables such as interest in war news.<sup>15</sup> For categorical variables like rank, we take a flexible stratification approach and parameterize constituent categories. Although we cannot account for respondent race in our models because this information was not preserved by archivists, we find little evidence of racial gaps in attitudes in the Gallup polls described above (Figure A-3).  $\epsilon_{i,b}$  are robust, base-clustered standard errors.<sup>16</sup> Table A-2 defines variables, and Table A-3 presents summary statistics.

This modeling approach relies on a selection-on-observables assumption. We use sensitivity analyses to probe robustness. First, difference-in-means tests show that gas-exposed and non-exposed soldiers are demographically balanced (Tables A-4, A-5). Second, we report Oster's bounds to assess the extent of omitted variable bias required to attenuate the core estimates. These bounds reflect the degree of confounding needed to drive the focal point estimate to 0. Third, we also conduct a series of tests to probe sensitivity to the conditional independence assumption (Figure A-6). Finally, our main estimates are also robust to a variety of specifications and modeling strategies, including multinomial logistic (Table A-6), probit (Table A-9), sequential-g (Table A-11), and conditional mixed process estimators (Table A-13); additional controls (Table A-8); compliance (Table A-12) and inverse probability of treatment weights (Table A-14); and coarsened exact matching (Table A-15).

## Results

The S-175 survey reveals extensive support among enlisted men for using chemical weapons against Japan. 91% of soldiers expressed support, of which 24% favored initiation and 67% favored retaliation. We cannot to chemical *initiation* and *retaliation* (Brown, 1968, p. 204). Section A-5 discusses the chemical weapons taboo and its evolution to 1944.

<sup>14</sup>If we only studied support for first-use, the extreme counternormative position, and observed a reduction owing to the training regimen, we would risk conflating reduced support owing to adoption of pro-normative attitudes (a shift from first-use to non-use) with reduced support owing to adoption of pro-doctrinal attitudes (a shift from first-use to second-use). The latter effect, whereby military training aligns soldiers' attitudes with national military doctrine—but likely not for norm-related reasons—is less theoretically interesting.

<sup>15</sup>Time deployed represents the length of time a respondent was stationed in Hawai'i.

<sup>16</sup>We cluster standard errors by airbase because chemical training regimens were assigned and organized at the base-level (section A-12). Unclustered (column 8 of Table 1) and wild bootstrap (Table A-7) results are similar.

directly compare these percentages to contemporaneous civilian support for use (24-46% in Figure 1) given differences in question wording. However, qualitative sources indicate that some military figures were consistently more supportive of use than the mass public before and during WWII (Brown, 1968; Dolan, 2013), suggesting a potential gap between military and civilian attitudes on WMDs in wartime settings (Koch and Wells, 2021, p. 15). Turning to our hypotheses, how did military training impact attitudes on chemical weapons use? In Figure A-4 we plot average support for using chemical weapons against Japan by gas exposure. Relative to soldiers who were never exposed, individuals with three exposures were about 6pp less supportive of use (one-sided  $p = 0.067$ ).

Table 1: Exposure to Gas in Training Reduced Soldiers' Support for Using Chemical Weapons

	Support for Using Chemical Weapons Against Japan (=1)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gas Exposure	-0.018* (0.008)	-0.018** (0.006)	-0.017** (0.004)	-0.014* (0.006)	-0.027** (0.008)	-0.026** (0.007)	-0.026** (0.007)	-0.026* (0.015)
Gas Mask Training	0.007 (0.006)	0.004 (0.007)	0.004 (0.007)	0.005 (0.006)	0.004 (0.006)	0.004 (0.006)	0.002 (0.006)	0.002 (0.007)
Observations	634	634	634	634	634	634	634	634
AIC	235	206	195	195	187	186	184	194
Oster's $\delta$	9.582	15.447	11.133	5.476	-34.271	-40.654	-215.026	-1288.248
PARAMETERS								
Airbase Clustered SEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Demographics		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Postwar Foreign Policy			Yes	Yes	Yes	Yes	Yes	Yes
Officers' Leadership				Yes	Yes	Yes	Yes	Yes
Information Access					Yes	Yes	Yes	Yes
Local Contact						Yes	Yes	Yes
Airbase FE							Yes	Yes

Note: \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ . Robust standard errors are in parentheses. Demographic controls are: age, education, rank, and months deployed. Postwar foreign policy is an index capturing belief the US will have friendly relations with the UK, China, and the Soviet Union after WWII. Officers' leadership is an index capturing the extent to which officers attend, participate in, and lead unit orientation meetings. Information access includes indicators for whether a respondent's unit has a war information center and holds regular orientation meetings, along with an index of self-reported interest in war news. Local contact is an index capturing interest in and experience visiting Honolulu during leave.

Table 1 offers a more formal test of hypothesis 1, which expects exposure to chemical irritants in training to reduce support for use. Column 1 represents our parsimonious specification. Column 2 adds demographic covariates like age, education, and rank. In columns 3 through 6 we add several other pertinent controls. Column 3 includes a measure of respondents' belief that the U.S. would maintain friendly postwar relations with its wartime allies. Column 4 incorporates favorability toward officers in respondents' units. In column 5 we control for respondents' access to information about the war effort, and in column 6 we control for respondents' contact with local civilians off-base. Column 7 adds airbase fixed effects, exploiting within-base variation in exposure to the two training regimens. Finally, column 8 includes robust, unclustered standard errors. Across models we find that each additional exposure to chemical irritants in training reduced support for using chemical weapons against Japan by 1.4 to 2.7pp. Multinomial logistic estimates in Table A-6 reveal that, relative to support for non-use, gas exposure reduced support for second-use by 19-31% and support for first-use by 6.4-17%.



To assess the robustness of these results, we take a number of steps, all of which are reassuring. In Table 1 we report Oster's  $\delta$ , which capture the extent of omitted variable bias required to attenuate the estimates. In columns 1 through 4, an unobservable factor would have to account for 5 to 15 times as much variation as existing controls. In columns 5 to 7, the  $\delta$ s are negative, indicating that controls in these specifications strengthen the estimated effect of gas exposure relative to a parsimonious baseline. Negative values are uninformative about the size of potential bias required to attenuate the results, but they do indicate that estimates are unlikely to be driven by omitted variables. Additional sensitivity analyses described in Figure A-6 also bolster our results.

Further, our estimates are stable across a host of alternative specifications and modeling strategies. Estimates remain precise when we incorporate additional controls for attitudes on chemical warfare training and readiness, knowledge of the history of chemical use in the Pacific theater, unit cohesion, and general views on the importance of military training for soldiers (Table A-8). Our core models use a least-squares estimator, but with a binary dependent variable, estimates could fall outside the unit interval. Table A-9 reveals consistent evidence using a probit estimator. Another concern surrounds simultaneity of attitudes around chemical weapons use and other factors like troops' interest in news about the war. If, for instance, gas exposure increased interest in war news, results could face post-treatment bias. In Table A-11, we find that our estimates remain precise using a sequential g-estimator, which incorporates (potentially) post-treatment covariates as mediators.

The most plausible threat to inference is that respondents with more gas exposure were more opposed to chemical weapons use *ex ante*. For instance, perhaps officers who took the initiative to send their units through gas exercises more frequently were also more active in teaching their soldiers about the humanitarian consequences of chemical warfare. This is particularly concerning since unit compliance with assigned training was imperfect—some troops in the mask regimen also went through gas exposure. Controlling for perceptions of officers' leadership helps address some concern that gas exposure is confounded by different practices of commanders. Additionally, by accounting for airbase fixed effects we leverage variation in exposure across units within the same station. If administrative directives influenced training programs for all units within a base, these parameters absorb variation of concern. Historical accounts are also reassuring. During WWII, military views were supportive of chemical weapons use for retaliation in-kind, and support was especially high among chemical officers responsible for leading units in gas training (Brown, 1968; Moon, 1984). If officers who took the initiative to lead soldiers in gas drills were typically more supportive of use and communicated this view to soldiers, the estimates should be conservative and biased downward. Further, a variety of additional tests build confidence. We find consistent evidence when we focus on the effects of gas exposure among troops who complied with treatment assignment (Tables A-12, A-13), when we weight estimates by the inverse probability of exposure (Table A-14), and when we match gas-exposed and non-exposed respondents (Table A-15).

Finally, in Table A-16 and Figure A-7 we explore heterogeneity in the effect of gas exposure. We find that

gas drills had a weaker effect among respondents deployed in Hawai‘i during Pearl Harbor. In contrast, the main effects are stronger for respondents with less abstract knowledge, who we expect to rely more on personal experiences (e.g., direct exposure to gas in training) to form political opinions. This heterogeneity notwithstanding, our main results offer compelling support for hypothesis 1. Consistent with expectations from political psychology and historical accounts of the chemical weapons taboo, soldiers exposed to chemical weapons—albeit briefly in a simulated attack during a training course—were substantially less supportive of using chemical weapons in war. Strikingly, these effects emerge even in a salient wartime setting, when attitudes were otherwise permissive.

## Conclusion

In wartime settings, normative prohibitions on WMDs face strain. Military officials, who wield particular influence in crises (Jost and Kertzer, 2021), are especially likely to contemplate counternormative actions as a means of saving lives and ensuring victory (Dolan, 2013). In this research note, we contribute to knowledge on these topics by studying military attitudes on chemical weapons during WWII. Leveraging a representative survey fielded across US AAF units in the Central Pacific theater, we document high levels of military support for using chemical weapons against Japan. We exploit variation in respondents’ chemical warfare training to understand how exposure to chemical weapons impacts attitudes around use. We find that soldiers exposed to chemical irritants in a simulated gas attack were substantially less supportive of using chemical weapons against Japan. This finding extends research from political psychology on the importance of salient, personal experiences in shaping political attitudes (Jervis, 1976; Horowitz, Stam and Ellis, 2015; Koch and Wells, 2021). Our findings also offer quantitative support for a key insight from historical accounts of the chemical weapons taboo, which emphasize how traumatic exposure to gas in WWI catalyzed pro-normative support for non-use (Brown, 1968; Moon, 1984). This study thus adds to our understanding of how the chemical weapons taboo emerged, and to our appreciation for how soldiers’ unique experiences shape their political attitudes and normative beliefs.

Importantly, the regimen we study remains a central component of US military training today. Recruits across branches of the modern US military are directly exposed to lachrymatory gas in basic training. The contemporary drill evolved from and closely resembles the WWII-era drill we study. Although the modern context has shifted substantially since WWII, and the chemical weapons taboo has only strengthened (Price, 1997), we believe that contemporary gas training is likely to reinforce military opposition to using chemical weapons. Our results underscore the political salience of military experiences, and raise important questions for further research. Scholars should continue to explore the durability of norms during war, probe the mechanisms underpinning elite and public attitudes (Lin-Greenberg, 2021), and consider other ways personal experiences and vivid information shape norm robustness. Archival military surveys represent a useful tool for examining these questions and more.

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