Supplementary Materials for Military Attitudes on the Chemical Weapons Taboo: Evidence from the Pacific Theater

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A-1 Literature on Weapons Taboos and Elite Attitudes

Seminal studies argue that the use of weapons of mass destruction (WMDs), like chemical and nuclear weapons, is taboo (Price, 1997; Tannenwald, 1999). While norms outline standards of appropriate behavior, taboos are stronger and more deeply internalized than typical norms. Taboos bear such internalized weight that violations are rarely considered (Tannenwald, 1999 p. 436). Quester (2006) argues that taboos connote "unthinkingness" because violations are viewed as so morally abhorrent.

The psychological, emotional, and moral underpinnings of weapons non-use norms are a subject of substantial debate. On one hand, evidence reveals that ethical considerations constrain support for counternormative actions (Carpenter and Montgomery, 2020), and that emotive information can mobilize opposition to WMD use (Koch and Wells, 2021). With respect to chemical weapons, the public is highly averse to use—more so than for use of nuclear or conventional weapons—and this aversion is not moderated by moral values (Smetana and Vranka, 2021). This effect reflects the perceived association of chemical weapons with rogue states and terrorist groups, and holds despite the fact that nuclear weapons are rightly considered more destructive (Smetana, Vranka, and Rosendorf, 2023). Crucially, when WMD use bears potential military advantages, support for use is undercut by moral disadvantages (Bowen, Goldfein, and Graham, 2023). In both wargames (Pauly, 2018) and in key historical moments like WWII and the Gulf War, non-use of chemical weapons resulted at least in part from a strong stigma against these weapons (Price, 1997). This stigma emerged from popular abhorrence after the horrific experiences of gas in WWI (Moon, 1984), as well as prolific anti-gas propaganda in the interwar period (Brown, 1968), and was legally codified in several international agreements over the 20th century (Jefferson, 2014).

On the other hand, recent research suggests important limits to the strength of alleged WMD taboos. Members of the public and elites may be willing to break a taboo if doing so offers military advantages (Press, Sagan, and Valentino, 2013; Rathbun and Stein, 2020; Dill, Sagan, and Valentino, 2022) or preserves other core values like saving the lives of co-national soldiers (Dolan, 2013; Sagan and Valentino, 2017). Similarly, it may be military organizational cultures—and not moral outrage—that motivate non-use (Legro, 1997). These analyses underscore that even when individuals support a norm, they may do so for consequentialist reasons rather than for reasons relating to intrinsic moral concern. Other materialist considerations like fear of setting a strategically-harmful military precedent through use (Gibbons and Lieber, 2019) and social desirability concerns (Pauly, 2018; Blair, Chu, and Schwartz, 2022) also drive opposition to WMD use. Finally, identity-based and partisan considerations may also intersect with concerns about norm violations. Throughout history, use of chemical weapons against victims perceived as "low-status" or "uncivilized" (e.g., Ethiopians during the Second Italo-Ethiopian War) have been considered more justifiable and less horrific (Tezcür and Horschig, 2021). Likewise, right-wing conservative ideology motivates contemporary support for nuclear use in Europe (Onderco, Etienne, and Smetana, 2022). In sum, this evidence suggests apparent WMD non-use norms are substantially weaker than proponents imply.

Attitudinal gaps between the mass public and policymaking elites over non-use norms are particularly relevant for our analyses, since we consider a novel military sample. Do elites view weapons taboos differently than the mass public? Classical scholarship suggests that the views of military elites are likely to be more hawkish than views of ordinary citizens. Militaries attract hawkish individuals (Jost, Meshkin and Schub, 2022) and socialize soldiers to view national security as a military issue (Lupton, 2022). Correspondingly, in the interwar period, military officials from the US Chemical Warfare Service were consistently more supportive of chemical weapons use than the general public, which was ardently opposed (Brown, 1968 p. 103-105). These accounts suggest that elites, and particularly military officials, will be more supportive of using WMDs than ordinary citizens.

However, new research indicates that policymaking elites may actually be more averse than the public to using WMDs. For instance, in surveys Smetana and Onderco (2022) find that German elites are more averse than the public to the use of nuclear weapons. One potential reason is that military elites (in democracies) take cues from civilian leaders and the general public, and refrain from supporting policies contrary to public opinion in order to preserve the military's reputation (Lin-Greenberg, 2021). Historical evidence from WWII is consistent with this view. During the war, chemical weapons were never assimilated into the US or other belligerent

militaries because military organizational cultures—in part inspired by public attitudes—were opposed (Legro, 1997). As Brown (1968, p. 291-292) describes of the US military: "[du]e in significant measure to its awareness of the abhorrence with which the public viewed gas during the twenties and thirties, the Army never seriously pressed for gas warfare readiness; an Army desiring integration into the mainstream of American life would not burnish its image by meaningful support of a weapon so distasteful to the public. Public opinion, therefore, contributed to the nation's low state of readiness for chemical warfare at the outbreak of war."

Potential gaps between elite and public opinion are important because military officials (Jost and Kertzer, 2021) and hawkish civilian advisors (Jost et al., 2022) bear particular influence in wars and security crises. From their privileged position, these elites can give cues to shape public opinion, and these cues can effectively spur civilians to adopt counternormative positions (Herzog, Baron, and Gibbons, 2022). Consistent with this evidence, war planners who favored the use of chemical weapons against Japan during WWII believed the military could influence public opinion to support use (Brown, 1968 p. 249).

We expand these perspectives by turning to the role of personal experiences in motivating elite attitudes around norms. The core of our argument is that salient personal experiences can produce visceral emotional responses, which undergird opposition to WMD use. This theory extends formative accounts about the emergence of the chemical weapons taboo (Brown, 1968; Moon, 1984), which trace the strength of the non-use norms to policymakers' horrific, personal experiences with chemical warfare during WWI. For instance, (Moon (1984) cites his experience being gassed at Ypres in 1918 as a key reason Hitler refrained from using chemical weapons in World War II (WWII). Similarly, American General John Pershing became a major advocate for international chemical warfare conventions in the interwar period, and attributed his advocacy to tragic memories of gas casualties in WWI. Overall, we believe this manuscript represents a distinct and important contribution to the literatures surveyed above and in the text.

A-2 Background on the ASWW2 Surveys

The American Soldier in World War II project was a major survey research effort undertaken by the War Department during WWII. In total, the effort produced more than 200 different surveys covering over 500,000 soldiers, or about 3% of all wartime US servicemembers. Background information described below comes from Stouffer et al. (1949) and Ryan (2013).

The ASWW2 surveys were fielded by the Research Branch of the Information and Education Division of the Army Service Forces. The Information and Education Division was formed in March 1941 as the Morale Division (later briefly known as the Special Services Division), and was commanded by Brigadier General Frederick Henry Osborn, a businessman, member of the Social Science Research Council, and friend of President Franklin Roosevelt. The Division included four sub-units: the Research Branch, the Information Branch, the Education Branch, and the Orientation Branch; the latter three were responsible for implementing recommendations based on findings from the Research Branch.

The Research Branch was led by Dr. Samuel A. Stouffer, a civilian technical advisor and sociologist, alongside a military chief. By war's end, the Research Branch included more than 55 military and 68 civilian staff, with research units in nine theaters and commands outside the continental US. In general, Army officers oversaw administration, while civilians and enlisted men served as technicians, clerks, or social scientific advisors. Sub-units of the Research Branch included the Survey, Experimental, Overseas, Statistical, Developmental, Field Study, Production, Editorial, and Overseas Analysis Sections. The overall aim of the Branch was to help the military understand and address issues of morale and combat motivation. Stouffer et al. (1949) described the mission of the Branch as one of social engineering to improve military effectiveness. Empirically, however, Stouffer sought an academic-military bridge that would leverage theory so that "hypotheses can be tested by crucial controlled experiments, with the aid of new quantitative tools."

The idea of conducting survey research in the military was initially contentious, and Secretary of War Henry L. Stimson prohibited research, fearing that allowing soldiers to express their opinions would be destructive to military organization and hierarchy. More generally, officers and commanders initially opposed surveys, preferring to believe military dogma and tradition rather than statistical results, and fearing surveys would inter-

fere with training and operations. Nevertheless, survey research under the ASWW2 project began on December 8, 1941 with the support of Army Chief of Staff General George C. Marshall, who was convinced of the merits of the project.

The ASWW2 initiative quickly gained broader support as survey findings impacted military policy, helping resolve key issues. Findings were disseminated in a monthly report, called "What the Soldier Thinks," down to commanders at the company-level. In the report, commanders read that the purpose was "bringing to officers concerned information of practical value in maintaining the morale and the fighting efficiency of troops under their command." Skeptical commanders were ordered to allow research, and were told that "Studies of soldier attitudes ... based on the statistical analysis of replies made anonymously to questions asked of thousands of soldiers ... is more representative—and therefore more generally applicable—than the personal impressions of even the most experienced and able officer-observers." By 1944, Major Charles Dollard, the head of the Research Branch in Europe, reported "no substantial resistance to research work anywhere in the theater." Over the course of the war, findings from the ASWW2 project resulted in concrete changes in pay scales, creation of the Combat Infantryman's Badge and the Expert Infantryman's Badge, modifications to training regimens to reduce fear of German weapons, and changes to publicity efforts like Frank Capra's "Why We Fight," among others.

Surveys were fielded on dozens of topics ranging from disease prevention to post-war employment plans. Topics were typically suggested by command staff sections according to known needs and challenges, and the Army developed a set of guidelines to standardize the survey process during the war. First, researchers would consult with requesting command staff about their aims. Then, trained staff would discuss issues bearing on the proposed study with soldiers. Based on these conversations, a questionnaire was drafted, tested, and revised to ensure question and response wordings were clear.

After questionnaires were finalized, units were sampled. Sampling followed a two-stage approach. First, units were selected through quota sampling depending on the aim and requirements of a particular survey. Preselection occurred in Washington, D.C. for surveys fielded in the continental US, and at theater headquarters for surveys fielded overseas. In most cases, the focal population was the cross-section of enlisted men in a given theater. Survey administrators had access to the latest secret data on troop strength, unit locations, and demographics. As such, although strictly random sampling was not possible given time and personnel constraints, stratification ensured sampled units represented the focal population in terms of branch and unit type. Deliberate efforts were also made to sample units at different stages of training or with different levels of experience. Following stratified unit sampling, systematic random sampling was used to select every *nth* individual from a unit duty roster. When a survey required specific numbers of individuals at a given rank or age, the research team could randomly sample for any desired category using individuals' qualification cards.

For questionnaire administration, randomly selected individuals were ordered by unit commanders to assemble at a specified time and place, where a soldier trained by the Research Branch would explain the purpose of the survey. Then, anonymous written surveys were administered to groups of selected troops. When interviewees expressed difficulty reading or understanding the written questionnaire, survey administrators conducted personal, oral interviews. In order to maximize comfortability during assessment, the Research Branch ensured interviewers and subjects were matched on race and enlistment status, so Black (white) subjects had Black (white) interviewers, and enlisted (commissioned) subjects had enlisted (commissioned) interviewers. Following completion of each wave, sampling experts verified representativeness along key dimensions like rank, age, and length of service, and drew corrective samples when necessary. Finally, responses were processed using numerical codes, converted to punch cards, and analyzed. Survey records were declassified following the war, and described in a landmark, four-volume manuscript (Stouffer et al., 1949). Our analyses draw on an ASWW2 survey provided by the National Archives and Roper iPoll.

A-3 Comparing Sample and Population Demographics

Table A-1 compares sample demographics to the demographics of the US military overall during WWII. The sample is somewhat more educated than the US military as a whole. This imbalance chiefly owes to the fact that units in the S-175 survey sample were assigned to the Army Air Force's VI Air Service Area Command. Roles in the Army Air Force were typically filled by better-educated recruits with higher scores on the Army General Classification Test (McManus, 1998).

Table A-1: Demographics of American WWII Servicemembers vs. S-175 Sample

	American WWII Servicemembers	S-175: Full Sample	S-175: Exposed	S-175: Not Exposed
Age:				
Age 15-25	0.499	0.508	0.478	0.605
Age 26-34	0.413	0.375	0.391	0.322
Age 35+	0.088	0.110	0.121	0.072
Education:				
Completed At Least Some High School	0.568	0.754	0.744	0.783
Completed At Least Some College	0.123	0.126	0.131	0.112
Service Duration:				
Mean Time in Military	16 Months	12-18 Months	12-18 Months	12-18 Months

Note: Numbers may not sum due to rounding. Data on age and service duration of US soldiers in WWII come from the National World War II Museum. Data on education of US soldiers in WWII come from Smith (1947). The S-175 sample is intended to be representative of white and Black enlisted men in the Army Air Force in the Central Pacific theater. Overall demographic statistics are not disaggregated by branch (e.g. Army, Navy, Marines), theater, or race, so it is not possible to directly compare our sample demographics to the focal population. "S-175: Exposed" refers to the subset of the sample who reported being exposed to a simulated chemical attack at least once. "S-175: Not Exposed" refers to the never-exposed subset of the sample.

A-4 Background on Chemical Warfare Training

For background, we describe details of the WWII-era and contemporary American chemical weapons training regimen here. The information described is based on Brophy and Fisher (1959)'s official history of Chemical Warfare Service (CWS).

During WWII, American chemical warfare capabilities fell under the responsibility of the Chemical Warfare Service (CWS), first formed in June 1918. During WWI, the CWS was tasked with preparing US forces for chemical warfare and managing American chemical, incendiary, and smoke-generation weapons. In the interwar and WWII periods, this fundamental role remained consistent. During WWII, the US (under President Roosevelt's direction) maintained a firm no first-use policy, meaning chemical weapons were only to be used for retaliation in-kind. Correspondingly, the CWS was denied substantial funds for producing offensive chemical weapons. Hence, the major focus of CWS training during WWII involved preparing troops for defending against Axis gas attacks.

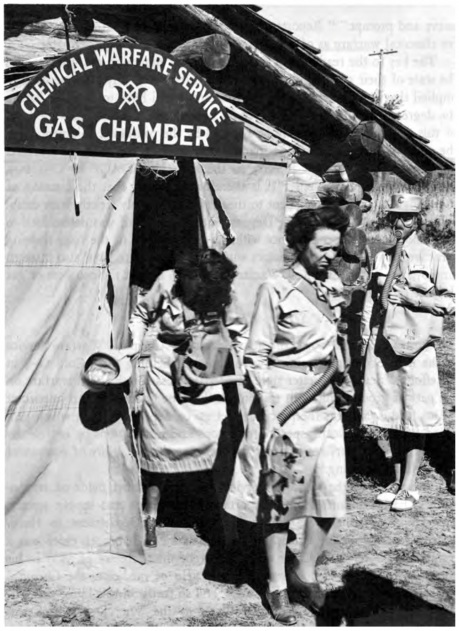
The fundamental philosophy of the US military in regards to chemical warfare was defensive, and "based on opposing effectively any enemy employing chemical agents" (Brophy and Fisher, 1959, 218). As a result, training for chemical warfare concentrated on demonstrating how to properly wear and decontaminate a gas mask in the event of an enemy gas attack. Gas mask training was especially important early in the war because CWS planners believed "that slack defense invited attack while superior defense deterred attack. Good gas discipline could be expected to deny military advantage to an enemy employing poison gas—and thus to discourage him from such use. And gas discipline depended on sound training supplemented by dependable protective equipment" (Brophy and Fisher, 1959, 191). To this end, unit commanders, in collaboration with CWS chemical officers, were directed to train their men to build comfortability with chemical protective gear like gas masks. Fearing that chemical warfare training would detract from training for traditional military tasks, most officers across military branches placed low priority on chemical training apart from gas masks early in the war. As WWII wore on, intense fighting in the Pacific spurred the military—and especially the Army (Air and Ground forces), which expected to play a key role in delivering chemical munitions in the event of use—to expand chemical training. By 1943, every division had a chemical warfare school, and all Army Air Force and Ground units were required to pass through gas chamber exercises. Many troops also received supplemental training in agents, munitions, decontamination, and first aid during chemical warfare (Brophy and Fisher, 1959, 386). Defensive chemical training was viewed as particularly important for AAF units—like those covered in our sample—because US planners expected that "[a]ir power would be the primary agent for retaliation" (Brown, 1968, 206). Figure A-1 depicts the gas exposure exercise in WWII.

The S-175 survey offers a unique chance to test the political consequences of these two military training regimens. The first program represents the standard model described above: soldiers were 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 represents the expanded training regimen developed after 1943. This program was more intensive, and soldiers were given special instruction on chemical warfare subjects. Additionally, the hallmark of the second program was direct exposure to chemical irritants in a gas chamber. 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 directly. Typically, chamber exercises involved tear gas 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), and a version of this regimen is still used in basic training for the US military today.

S-175 survey administrators drew their sample to exploit differential exposure to these training regimens. Of 648 respondents, 368 were sampled from units assigned to the gas mask regimen and 280 were sampled from units assigned to the expanded gas chamber regimen. However, compliance with assignment to different training regimens was low ($\approx 53\%$). Some commanders of units assigned to either training program also ordered their troops to participate in the other, unassigned program. Hence, some soldiers in the gas mask regimen also passed through the gas chamber and vice versa. These deviations from protocol occurred at the discretion of

officers responsible for training. Interviews conducted by the Research Branch with commanders after the survey revealed that unit commanders typically directed their soldiers to participate in the unassigned training as a way to break the routine and monotony of standard drills.

Figure A-1: Women's Army Corps Members Receive Gas Exposure Training



Note: In this photo excerpted from Brophy and Fisher (1959, p. 387), members of the Women's Army Corps (WACs) emerge from the gas chamber exercise after exposure to tear gas.

To this day, soldiers in basic training go through similar gas exposure drills. In the modern formulation, recruits spend roughly five minutes inside a chamber filled with burning CS tear gas tablets in order to gain familiarity with their gas masks and protective equipment. Then, recruits break the seals of their masks before learning how to reseal them. Finally, after resealing their masks recruits are instructed to fully remove their helmets and masks. At this stage recruits spend another five minutes in the chamber maskless in order to experience full exposure to the gas.

Figure A-2: Modern Army Recruits Receive Gas Exposure Training

Note: In this photo excerpted from Britzky (2022), soldiers from the 35th Combat Sustainment Support Battalion exit a gas chamber during training at the Combined Arms Training Center at Camp Fuji, Japan.

A-5 Background on Evolution of the Chemical Weapons Taboo to 1944

For background, we describe the origins and evolution of American and international thinking around the chemical weapons taboo to 1944. This discussion draws chiefly on archival materials described by Brown (1968), who offers the most comprehensive study of US thinking around chemical warfare in the interwar period. All page numbers cited below refer to Brown (1968) unless otherwise noted. For additional work on the evolution of the chemical weapons taboo see Bunn (1969), Moon (1984), and Price (1997). As the discussion below highlights, top US officials acknowledged a strong norm against the initiation of chemical weapons use and an emergent norm against retaliation in-kind from late 1922.

International efforts to prevent the use of toxic chemicals in war first began in the 19th century. The first attempt at an international agreement banning the use of such weapons was the 1899 Hague Gas Declaration, which committed signatory countries "to abstain from the use of projectiles the sole object of which is the diffusion of asphyxiating or deleterious gases." In all, 27 countries, including all of the belligerent European great powers of WWI, agreed to this provision. Although US representatives attended the conference, the US did not sign on to the Declaration concerning the Prohibition of the Use of Projectiles with the Sole Object to Spread Asphyxiating Poisonous Gases. At this early stage, American opposition was motivated by the fact that no country fielded operational chemical weapons (Bunn, 1969, p. 375-376). However, by 1909 the US had ratified the the 1907 Hague Convention on Land Warfare, which contained an explicit provision prohibiting the use of "poison or poisoned weapons" in war. These early efforts notwithstanding, chemical weapons featured prominently in WWI. In the course of the war, belligerent powers ignored existing limitations on the use of gas. However, by war's end traumatic reports and memories of gas use had left policymakers and publics worldwide with a broadly-held, vivid, and morally-rooted opposition to chemical weapons.

In the immediate interwar period, a legal restriction on the use of chemical weapons was instantiated in the Treaty of Versailles. According to the terms of the peace, "The use of asphyxiating, poisonous, or other gases and of analogous liquids, materials or devices being prohibited, their manufacture and importation are strictly forbidden in Germany." Implicit in this clause was a recognition that gas armaments were "prohibited" weapons of war. Although this treaty was not ratified by the US because of Senatorial concern, chiefly over the League of Nations, the treaty's anti-chemical weapons clause was enshrined in peace agreements the U.S. negotiated with Germany, Austria, Bulgaria, and Hungary (Bunn, 1969, p. 376-377).

Ardent US interest in the emergent anti-gas norm first emerged in the 1920s and crystallized in the run-up to WWII. The first major development was the Washington Naval Conference, held in Washington, D.C. from November 1921–February 1922. Involving nine nations—the US, Japan, China, France, Britain, Italy, Belgium, the Netherlands, and Portugal—the Conference focused on military interests in the Pacific Ocean and East Asia. For President Harding, the deliberations "provided an opportunity for the United States to take the lead in limiting the menace of gas warfare" (61). At the outset of the Conference, US policymakers sought merely to prohibit the use of chemical weapons against cities and non-combatants, anticipating a future role for gas against military targets during war. However, by the time the Sixteenth Meeting of the Committee on Limitation of Armament opened on January 6, 1922, this position had starkly transformed (62-63). When the committee opened that day, US Secretary of State Charles Evans Hughes read a report of the Advisory Committee to the American Delegation, a committee consisting of 21 US policymakers "appointed by President Harding 'to represent public opinion' ... [including] Herbert Hoover, General Pershing, Rear Admiral Rodgers of the Navy, and J. Mayhew Wainwright, Assistant Secretary of War" (64). As Hughes described:

> "The Advisory Committee felt there could be 'no actual restraint of the use by combatants of this new agency of warfare, if it is permitted in any guise.' The terrifying potential of airplane-delivered gas attacks was emphasized: 'The frightful consequences of the use of toxic gases, if dropped from airplanes on cities, stagger the imagination. ... If lethal gases were used in such bombs [high explosive bombs used to attack cities during WWI], it might well be that such permanent and serious damage would be done, not only of a material character but in the depopulation of large sections of the country, as to threaten, if not destroy, all that has been gained during the painful centuries of the past.' The Advisory Report then invoked the conscience of the American people. 'The Committee

> is of the opinion that the conscence [sic] of the American people has been profoundly shocked by the savage use of scientific discoveries for destruction rather than for construction. ... The American representatives would not be doing their duty in expressing the conscience of the American people were they to fail in insisting upon the total abolition of chemical warfare.' The Report concluded by [advocating that] 'chemical warfare, including the use of gases, whether toxic or non-toxic, should be prohibited by international agreement, and should be classed with such unfair methods of warfare as poisoning wells, introducing germs of disease, and other methods that are abhorrent in modern warfare."' (64-66)

After introducing this proposal, Hughes quoted supportive reports from General Pershing and the General Board of the US Navy. Pershing's comment was particularly striking: "Chemical warfare should be abolished among nations, as abhorrent to civilization. It is a cruel, unfair and improper use of science. It is fraught with the gravest danger to the noncombatants and demoralizes the better instincts of humanity" (66). Subsequently, Delegate Elihu Root presented a formal resolution:

> "The use in war of asphyxiating, poisonous or other gases and all analogous liquids, materials or devices, having been justly condemned by the general opinion of the civilized world and a prohibition of such use having been declared in treaties to which a majority of the civilized are parties: Now to the end that this prohibition shall be universally accepted as a part of international law binding alike the conscience and practice of nations, the Signatory Powers declare their assent to such prohibition, agree to be bound thereby between themselves and invite all other civilized nations to adhere thereto."' (66-67)

The next day, on January 7, 1922, this resolution was accepted by the state parties to the Washington Conference. The US Senate unanimously ratified the resolution on February 6, 1922, committing the US to chemical weapons non-use. Unfortunately the Washington Treaty did not enter force because of French ratification failure owing to concerns over limitations on submarine use. Still, in Elihu Root's words, the chemical weapons non-use norm "presented the most extraordinary consensus of opinion that one could well find upon any international subject" (67). Indeed, US policymakers' rapid transformation from supporting limits on gas (in November 1921) to supporting outright prohibition (in January 1922) is attributable to public opinion. The American Advisory Committee had conducted a nationwide public opinion poll in December 1921 and found "an overwhelming sentiment among the American people for the complete abolition of submarines and gas warfare" (68-69).

Owing to the prohibition enshrined at the Washington Conference, US military officials hesitated to integrate chemical weapons into training or readiness plans throughout the interwar period. Army Chief of Staff General March announced that 'humanitarian' commitments meant the US could test poison gases (84). Likewise, in a series of orders the War Department "deleted all reference to offensive chemical warfare and confined training 'to the use of smoke, incendiary materials, non-toxic gas for training, and gas-defense appliances'." When an Army Corps Commander requested including gas use in war plans in December 1922, his request was denied by General Pershing. As Pershing commented, "'It is inconceivable that the United States will initiate the use of gases... and by no means certain that it will use them even in retaliation. Aside from this, it is quite unlikely that the prospective enemy... will invite retaliatory measures by using gases in any form. Should he do so, however, the action to be taken will be decided when the time comes" (93-94). US military integration of chemical weapons for potential retaliatory use remained deficient throughout the interwar period. No toxic munitions were filled in the US from 1922 until the start of WWII; "[t]here was no chemical warfare readiness to rely on in active units nor were there reserve stocks in case of mobilization" (133). In short, from late 1922, top US military officials acknowledged a strong norm against the initiation of chemical weapons and a developing norm against retaliation in-kind.

In 1925, the US led another effort to enshrine the nascent norm of chemical weapons non-use through the Geneva Protocol, also known as the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or other Gases, and of Bacteriological Methods of Warfare. At the 1925 Convention, the multinational Military Committee "urged that all Powers abstain from chemical-biological warfare" (100). Likewise, the US delegation noted American policy was "to seek on every appropriate occasion international agreements tending to insure the ultimate universal prohibition of the use of asphyxiating gases as a means of warfare" (101). US Congressman

Burton, a delegate in Geneva, proposed widening the prohibition enshrined in the Washington treaty to "all nations," and Army Chief of Staff General Nolan concurred, although other military officials were hesitant (101). The Geneva Protocol was signed with broad international support, and "the American Delegation returned to the United States boasting another substantial contribution to the American campaign to prohibit gas warfare" (102-103). Most European powers attached reservations to their ratification of the Protocol indicating that their own non-use was subject to reciprocity. This pattern strengthened the non-initiation norm at the expense of the nascent, more expansive norm against chemical initiation and retaliation. Unfortunately, US Secretary of State Frank Kellogg had done little to whip support for the Protocol in the Senate. Seizing this opportunity, the chemical industry and officers from the Chemical Warfare Service lobbied the Senate about the need for preparedness, swaying the vote against ratification (108). Still, US declaratory "policy remained in support of efforts to prohibit gas warfare" throughout the remainder of the interwar period. During this time, the European powers also became more ardent supporters of "complete prohibition of chemical warfare" (108-109).

Growing European interest in non-use of chemical weapons catalyzed the World Disarmament Conference held in Geneva in 1932. Outlining the American position in a speech at the Conference on February 9, 1932, Ambassador Hugh Gibson noted that the US "advocate[d] the total abolition of lethal gases and bacteriological warfare." On April 2, 1932, the US delegation broadened its commitment even further: "The United States is prepared to accept not merely the abolition of lethal gases as heretofore announced, but the abolition of the use of all toxic gases in war." Importantly, this policy was agreed by President Hoover, Secretary of State Stimson, the Army Chief of Staff, and the Chief of Naval Operations (112).

Subsequent to this announcement, 17 countries proposed various prohibitions on chemical warfare at the Conference. In addition to the US proposal for an abolition on lethal gas, which the Netherlands supported, a total abolition on all forms of chemical warfare (lethal and non-lethal) was advocated by Britain, Germany, Japan, Sweden, Denmark, Poland and Haiti. France consented to a prohibition on chemical projectiles, while Russia, China, Italy, and Spain consented to a prohibition on the use of "aggressive or offensive gas" (113-114). Hence, by 1932 the major belligerents of WWII had publicly advocated for comprehensive chemical weapons non-use (US, UK, Germany, Japan) or at least non-initiation (USSR, China, France, Italy). Crucially, the consensus among American policymakers was that "any agreement should be a general prohibition, universal in scope" (115). In a June 22, 1933 speech, President Hoover reiterated this perspective, noting, "I propose the adoption of the presentation already made at the Geneva Conference for the abolition of ... all chemical warfare" (117). While the US War Department hoped to preserve some capacity for readiness, and opposed efforts to limit peacetime manufacture of defensive gas materiel, the European powers went a step further, advocating for a "prohibition of use in war and termination of peacetime preparations for chemical warfare" (118).

The European-supported plan for a total abolition on chemical weapons received its clearest expression in March 1933, when the British tabled the MacDonald Plan. This proposal "absolutely prohibited the use of chemical, biological, or incendiary weapons against any nation... [including] toxic, asphyxiating, lachrymatory, irritant, or vesicant substances[,]... prohibited [chemical warfare preparations] in time of peace as in time of war[, and]... [barred] manufacture, import, export or ... possession of appliances or substances exclusively suited to chemical or incendiary warfare" (120). This radical pro-normative proposal was accepted by US President Franklin D. Roosevelt, and influenced the Conference's draft disarmament convention, which ultimately "prohibited [chemical initiation,] retaliation[,] and use of riot-control gases" (121).

Overall, then, US policy toward chemical weapons in the interwar period supported absolute non-use. By 1932, "[t]he State [Department] view was that the United States was morally bound not to employ lethal agents as a result of the positions taken at the Washington Arms Conference and the two Geneva Conferences." Moreover, US public opinion was adamantly opposed to the use or preparation for use of chemical weapons as a result of anti-gas propaganda (123). Presidents Hoover and Roosevelt also expressed ardent opposition to the use of chemical weapons under any circumstance. For instance, in 1937 President Roosevelt vetoed a bill to rename the Chemical Warfare Service and expand its role. In vetoing, he noted:

> "It has been and is the policy of this Government to do everything in its power to outlaw the use of chemicals in warfare. Such use is inhuman and contrary to what modern civilization should stand

> for. I am doing everything in my power to discourage the use of gases and other chemicals in any war between nations. While, unfortunately, the defensive necessities of the United States call for study of the use of chemicals in warfare, I do not want to aggrandize or make permanent any special bureau of the Army or the Navy engaged in these studies. I hope the time will come when the Chemical Warfare Service can be entirely abolished."' (66-67)

Experts at the time doubted whether "[w]ith presidential views as strong as these... the United States would even retaliate with chemical weapons, much less initiate their use" (124-125). In the mid and late 1930s, Roosevelt's top military officials, like Army Chief of Staff General Malin Craig, echoed this refrain and expressed "personal animosity toward gas" (152). Thus, efforts by commanders of the CWS to advocate for chemical warfare readiness "were singularly unsuccessful" to 1939 (145). On the eve of WWII, an anti-chemical weapons attitude "was shared by the majority of the Army" (150-151). For top US policymakers, opposition to using chemical weapons was not borne out of strategic fears or technological inability, but "derived from a genuine desire to limit unrestricted war, typified by the use of gas in World War I..." (150-151). Public and elite opposition were intertwined with customary international legal prohibitions agreed over the prior three decades (183-184). Although norms of and commitment to chemical non-use were sharper for initiation, contemporary arms control advocates had also made a distinct case for a prohibition on retaliatory, second-use (185-186). Brown elaborates these constraints on gas employment at the outbreak of WWII:

> "The range of restraints on American employment of toxic agents in September 1939 was impressive. For all practical purposes, the United States had no capability for waging chemical warfare. Unpreparedness for offensive use of gas was absolute, and defensive readiness was only slightly greater. And there was no compelling force to change the order of military-readiness priorities that had caused the lack of gas warfare preparedness. The combined opposition of the President and the War Department was sufficient to preclude any variation in priorities. ... All in the administration realized that, personal or institutional sentiments aside, public opinion was strongly against any use of chemical agents and adamant in its opposition to American initiation of the use of toxic agents. Public opinion was codified in a perceived customary law prohibition of gas warfare."' (187)

The exigencies of combat during WWII strained but did not break the chemical weapons taboo. In spite of a large American mobilization in 1940-1941, the War Department reduced recruitment of CWS officers and blocked the formation of new CWS units (193). Evaluating the state of readiness in July 1941, General Porter, the Chief of the CWS, described US retaliatory chemical capabilities as "precarious" (195). Outside the US, awareness of and respect for the legal restraints on employment of chemical weapons also remained robust in the early years of WWII. In September 1939, Britain, France, Italy, and Germany "exchanged pledges to observe the provisions of the Geneva Protocol subject to reciprocity." Britain circulated a comparable pledge with Japan, which affirmed its own commitment albeit "evasive[ly]" (198-199). In early 1944, Japan made a firmer commitment to refrain from the use of toxic agents (248).

In the US, entry into the war caused policymakers to reexamine policy on chemical warfare. Of particular concern was a perception in the Executive branch that Japan did not view itself as bound by legal restraints on the use of chemical weapons against the United States. Still, in 1942 the Navy, which maintained primary responsibility for the war in the Pacific, restated is blunt view "against the use of such [toxic] gasses [sic] in warfare" (198-199). Unfortunately, several instances of Japanese employment of chemical weapons against Chinese troops between 1939 and 1942 forced the US to take a stronger stance; these instances of use were the responsibility of reckless Japanese field commanders and not centrally directed (247). In response, on June 5, 1942 President Roosevelt announced a retaliatory chemical weapons policy:

> "Authoritative reports are reaching this Government of the use by Japan's armed forces in various localities of China of poisonous or noxious agents. I desire to make it unmistakably clear that, if Japan persists in this inhumane form of warfare against China or against any other of the United Nations, such action will be regarded by this Government as though taken against the United States, and retaliation in kind and in full measure will be meted out. We shall be prepared to enforce complete retribution. Upon Japan will rest the responsibility." (200-201)

In a blow to the more expansive taboo against chemical initiation and retaliation envisioned by interwar arms control advocates, FDR committed the US to non-initiation, and to global retaliation in-kind as a means to deter Axis initiation. Yet, owing to interwar restraints on readiness, the US lacked the capacity to enact global retaliation at this stage. In summer 1942, the US "had neither the aircraft nor the toxic agents and ancillary equipment for anything more than a token attack" (201). Nor were military officials eager about chemical retaliation. The War Department objected to a declaratory policy it could not affect. General McNair, the Commander of Army Ground Forces, also registered a strong dissent. He "was adamantly opposed to gas warfare" for moral reasons, and advocated against in-kind retaliation if the Axis initiated chemical warfare, viewing massive conventional bombing as a sufficient deterrent (203-204). Admiral Leahy, the Chief of Staff to President Roosevelt, was also opposed to any gas warfare, stating that it "would violate every Christian ethic I have ever heard of and all of the known laws of war" (264, 267). With the annunciation of a retaliatory doctrine, the War Department also moved to centralize decisionmaking over the use of chemical weapons, revoking retaliatory use authority from field commanders and making it a presidential decision (205). Hence, US chemical warfare doctrine during WWII was settled by late 1942. The US committed not to initiate chemical use, but threatened massive retaliation. Retaliatory use was the decision of the president alone. Declaratory threats were backed by minimal readiness for effective deterrence.

Outside the United States, other major belligerent powers took a similar approach. In Britain, policy "rested upon one central assumption: that under any foreseeable circumstances, the employment of toxic agents in war was disadvantageous" (208). Britain had committed itself to non-use at the Washington Conference and Geneva Protocol, subject to reciprocity, and advocated for prohibition of peacetime chemical weapons preparedness at the Disarmament Conference. At the outbreak of WWII Britain reaffirmed its commitment to the Geneva Protocol in notes circulated with France, Germany, Italy, and Japan. In May 1942, at the urging of the Soviet Union, Prime Minister Churchill announced that the UK "accepted legal prohibition of employment of toxic agents, but reinforced this with a threat of massive retaliation in the event of enemy initiation" (210-211). Moreover, the British public retained its "[p]opular revulsion against... any form of preparations for toxic agent employment" throughout WWII (212).

The Axis powers confronted comparable restraints against the use of chemical weapons in war. Although Germany used gas extensively in the Holocaust, Nazi officials objected to the battlefield use of gas. In 1939, Germany affirmed that it would abide by the Geneva Protocol subject to Allied reciprocity (230-231). At the outset of WWII, Hitler was motivated by "personal aversion to gas warfare" owing to his WWI experience–he was temporarily blinded by gas at Ypres in 1918. During the 1930s and early 1940s he "did not show any interest in chemical warfare preparedness... [and] never even visited [Nazi] chemical warfare development exhibitions" (235-236). More broadly, as in the US and Britain, the Nazi officer corps failed to assimilate chemical warfare because of the influences of popular opinion and widespread anti-gas propaganda (245-246).

In Japan, mass revulsion was a less salient restraint on the use of chemical weapons because Japan had not participated in gas warfare during WWII. However, Japanese war planners were convinced of the strength of anti-chemical weapons norms during WWII. Postwar American inquiries revealed that "the Japanese were absolutely confident that the United States would not employ toxic agents." This estimation was based on their confidence that Roosevelt and the American populace retained an ardent and absolute anti-gas attitude (249-250). Above all, Japanese calculations were based on the fact that the US had not retaliated in-kind after Japanese initiation in China from 1939-1942. In short, Japanese military officers believed that US officials would not engage in "retaliatory gas warfare" (250-251). In early 1944, when Japan announced an "absolute decision to refrain from the use of toxic agents," their decision was based chiefly on "recognition of a legal obligation not to use gas," as well as on their vulnerability to US retaliation (260). From mid-1944, Japan discontinued production of chemical munitions, recalled stocks of chemical weapons from field deployment, and began unilateral chemical disarmament (261). This decision reflected Japanese acceptance of an absolute prohibition on chemical warfare by WWII's end.

In the late stages of WWII, after the Nazi surrender in May 1945, some US policymakers reconsidered the use of chemical weapons Dolan (2013). At that stage, top officials like General Marshall, the Army Chief of Staff, suggested initiating chemical use to expedite the end of the war in the Pacific. These suggestions were quickly quashed by Admiral Leahy, who maintained a firm commitment not to engage in chemical warfare (284-

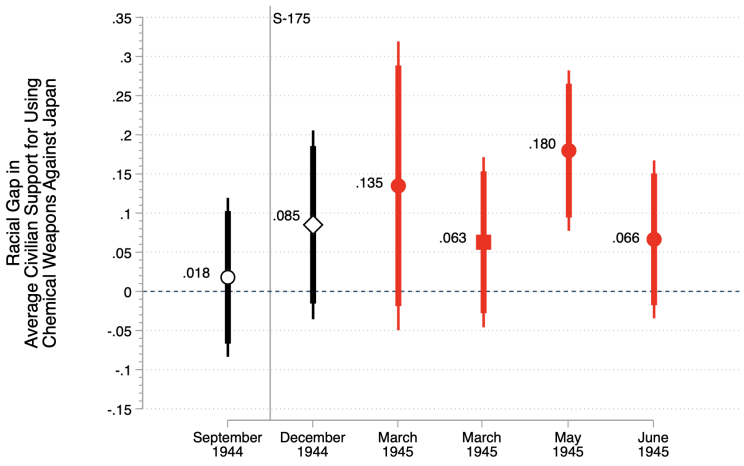
285). Simultaneously, efforts to increase US readiness for chemical warfare, and even retaliatory use, lagged. As in 1942, when America's retaliatory policy was first announced, in 1945 "the United States did not have the military capability to carry out the retaliation promised by the President" (265). Logistics planners noted in July 1945 that "effective retaliatory preparedness [was] in considerable jeopardy" because military commanders refused to direct shipments of chemical munitions to deployment points in the Pacific (277). This unwillingness resulted in no small measure from the chemical non-use norm and durable, widespread military views that gas was "an insidious, dishonorable weapon" (288). Although the American public became somewhat more tolerant of potential chemical weapons use as bitter fighting in the Pacific ground on, there remained a widespread view that chemical weapons were an "inhuman method of warfare" (291-292).

A-6 No Evidence of a Racial Gap in Support for Chemical Weapons

The S-175 survey includes both white and Black enlisted men. However, archivists did not preserve information on respondents' race when the survey was digitized. This raises a natural question about whether the focal, negative effect of gas exposure on support for chemical weapons use is driven by Black soldiers. We believe this is unlikely. For one, a relatively small share of soldiers in the Central Pacific theater—roughly 6.5%—were Black. Because the survey was designed to be representative of troops in the Central Pacific, this means that Black soldiers are likely to account for a small proportion of our sample. Further, although we cannot test for a racial gap in support given the absence of information on respondent race in the S-175 data, we can study Gallup polls of civilian respondents described in Figure 1.

In Figure A-3 we study the gap between Black and white civilians in support for using chemical weapons against Japan. Estimates are substantively small and imprecise, yielding no statistically distinguishable evidence of a racial gap in 5 of 6 samples fielded between September 1944 and June 1945. The racial gap in support is especially small in Gallup polls taken around October 1944, when the S-175 survey was fielded. The distinguishable gap in Black versus white support for use in May 1945 may reflect a unique effect of the Battle of Okinawa. Specifically, more than 2,000 Black Marines—a larger concentration of Black troops than in any previous Pacific operation—fought at Okinawa.

Figure A-3: No Evidence of a Racial Gap in Support for Using Chemical Weapons



Note: Plots show the difference between Black versus white civilian respondents in support for 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. Red 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.

A-7 Coding Core Variables

For reference, we describe the survey questions and responses used to code our core variables here. Index variables are constructed by inverse covariance weighting constituent question responses.

Table A-2: Core Variables and Question Coding

Concept/Question	Response Coding
Support for Using Chemical Weapons Against Japan	
What do you think we should do about using gas against the Japanese in this war?	We should use gas now and take [them] by surprise. OR We should not use gas unless [they] do first.
Gas Exposure	
During the last 3 months, about how often have you been through a gas chamber?	0, 1, 2, 3
Gas Mask Exposure	
During the last 4 weeks how many times have you worn your gas mask for a half-hour while on duty?	0, 1, 2, 3, 4
Age	
How old were you on your last birthday?	$\leq$18, 19, 20, 21, 22, 23, 24, 25, 26-29, 30-34, $\geq$35
Education	
How far did you go in school?	<8th Grade, 8th Grade, Some High School, High School, College
Rank	
What is your Army rank or grade?	PRV./PFC., CPL./TCH5., SGT./TCH4., SSGT./TCH3., TSGT./MSGT./1SGT.
Months Deployed	
How many months have you been overseas?	$\leq$3, 3-6, 6-9, 9-12, 12-18, 18-24, 24-30, 30-36, $\geq$36
Postwar Foreign Policy Index	
How do you think we will get along with China after the war?	Very Well
How do you think we will get along with Russia after the war?	Very Well
How do you think we will get along with England after the war?	Very Well
Officers' Leadership Index	
Would you rather have an officer or an enlisted man lead [orientation] meetings?	I would rather have an officer.
Do company officers go to these orientation meetings?	Yes, the officers go to them.
Do you think the men in your outfit get into the discussion more or less when the officers attend the meeting?	More discussion when officers attend.
Information Access	
Is there a war information center in or near your outfit?	Yes.
About how often do you go to orientation meetings?	Once a week. OR More often than once a week.
War News Interest Index	
[H]ow interested would you be in each subject:	
America's part in world affairs after the war	Very Interested.
Facts about our enemies—Germany and Japan	Very Interested.
Facts about our allies—England, Russia, China, etc.	Very Interested.
Progress of the war against Japan	Very Interested.
Progress of the war against Germany	Very Interested.
Problems of the peace	Very Interested.
The importance of the Central Pacific in the war	Very Interested.
Local Contact Index	
Do you have trouble finding interesting things to do in Honolulu?	No, I don't.
When you get a pass for 8 hours or more, how often do you go to Honolulu?	Every Time.

A-8 Summary Statistics

Summary statistics for our core variables are described below

Table A-3: Summary Statistics

	Observations	Mean	Std. Dev.	Min	Max
DEPENDENT VARIABLES					
Support Using Chemical Weapons Against Japan	634	0.907	0.291	0.000	1.000
Support First-Use Against Japan	634	0.237	0.425	0.000	1.000
Support Second-Use Against Japan	634	0.670	0.470	0.000	1.000
INDEPENDENT VARIABLES					
# of Times Exposed to Gas	648	1.188	0.921	0.000	3.000
# of Times Training w/ Gas Mask	648	2.046	1.785	0.000	4.000
CONTROL VARIABLES					
Schooling: <8th Grade	648	0.113	0.316	0.000	1.000
Schooling: 8th Grade	648	0.130	0.336	0.000	1.000
Schooling: Some High School	648	0.281	0.450	0.000	1.000
Schooling: High School	648	0.346	0.476	0.000	1.000
Schooling: College	648	0.127	0.333	0.000	1.000
Age: $\leq$18	648	0.003	0.056	0.000	1.000
Age: 19	648	0.019	0.135	0.000	1.000
Age: 20	648	0.071	0.257	0.000	1.000
Age: 21	648	0.068	0.252	0.000	1.000
Age: 22	648	0.099	0.299	0.000	1.000
Age: 23	648	0.080	0.272	0.000	1.000
Age: 24	648	0.106	0.309	0.000	1.000
Age: 25	648	0.062	0.241	0.000	1.000
Age: 26-29	648	0.185	0.389	0.000	1.000
Age: 30-34	648	0.190	0.392	0.000	1.000
Age: 35+	648	0.110	0.313	0.000	1.000
Rank: PRV./PFC.	648	0.395	0.489	0.000	1.000
Rank: CPL./TCH5.	648	0.285	0.452	0.000	1.000
Rank: SGT./TCH4.	648	0.187	0.390	0.000	1.000
Rank: SSGT./TCH3.	648	0.083	0.277	0.000	1.000
Rank: TSGT./MSGT./1SGT.	648	0.037	0.189	0.000	1.000
Time Deployed: $\leq$3 Months	648	0.090	0.286	0.000	1.000
Time Deployed: 3-6 Months	648	0.054	0.226	0.000	1.000
Time Deployed: 6-9 Months	648	0.035	0.185	0.000	1.000
Time Deployed: 9-12 Months	648	0.202	0.402	0.000	1.000
Time Deployed: 12-18 Months	648	0.116	0.320	0.000	1.000
Time Deployed: 18-24 Months	648	0.159	0.366	0.000	1.000
Time Deployed: 24-30 Months	648	0.219	0.414	0.000	1.000
Time Deployed: 30-36 Months	648	0.028	0.164	0.000	1.000
Time Deployed: 36+ Months	648	0.093	0.290	0.000	1.000
Postwar Foreign Policy Index	648	-0.000	1.000	-0.722	2.912
Officers' Leadership Index	648	0.000	1.000	-1.056	2.767
Unit Has War Information Center	648	0.559	0.497	0.000	1.000
Unit Holds Regular Orientation Meetings	648	0.539	0.499	0.000	1.000
Interest in War News Index	648	-0.000	1.000	-2.562	0.891
Local Contact Index	648	-0.000	1.000	-0.687	2.533

Note: Summary statistics show mean values in the full sample. Most covariates are indicators. Indices are z-standardized and inverse covariance-weighted.

A-9 Differences-in-Means by Gas Exposure

We depict differences-in-means across covariates in Tables A-4 and A-5, specifically comparing soldiers exposed and not exposed to gas exercises.

Table A-4: Difference-in-Means: Any Gas Exposure vs. No Gas Exposure

	Not Exposed to Gas	Exposed to Gas	Difference-in-Means (Not-Exposed - Exposed)
Schooling: <8th Grade	0.105	0.115	-0.010
	(0.308)	(0.319)	
Schooling: 8th Grade	0.105	0.137	-0.032
	(0.308)	(0.344)	
Schooling: Some High School	0.289	0.278	0.011
	(0.455)	(0.449)	
Schooling: High School	0.382	0.335	0.047
	(0.487)	(0.472)	
Schooling: College	0.112	0.131	-0.019
	(0.316)	(0.338)	
Age: $\leq$18	0.000	0.004	-0.004
	(0.000)	(0.063)	
Age: 19	0.020	0.018	0.002
	(0.140)	(0.134)	
Age: 20	0.099	0.062	0.036
	(0.299)	(0.242)	
Age: 21	0.066	0.069	-0.003
	(0.249)	(0.253)	
Age: 22	0.138	0.087	0.051
	(0.346)	(0.282)	
Age: 23	0.112	0.071	0.041
	(0.316)	(0.256)	
Age: 24	0.092	0.111	-0.019
	(0.290)	(0.314)	
Age: 25	0.079	0.056	0.022
	(0.271)	(0.231)	
Age: 26-29	0.184	0.185	-0.001
	(0.389)	(0.389)	
Age: 30-34	0.138	0.206	-0.067
	(0.346)	(0.405)	
Age: 35+	0.072	0.121	-0.049
	(0.260)	(0.326)	
Rank: PRV./PFC.	0.401	0.393	0.008
	(0.492)	(0.489)	
Rank: CPL./TCH5.	0.322	0.274	0.048
	(0.469)	(0.447)	
Rank: SGT./TCH4.	0.191	0.185	0.005
	(0.394)	(0.389)	
Rank: SSGT./TCH3.	0.072	0.087	-0.014
	(0.260)	(0.282)	
Rank: TSGT./MSGT./1SGT.	0.013	0.044	-0.031
	(0.114)	(0.206)	
Time Deployed: $\leq$3 Months	0.092	0.089	0.003
	(0.290)	(0.285)	
Time Deployed: 3-6 Months	0.072	0.048	0.024
	(0.260)	(0.215)	
Time Deployed: 6-9 Months	0.026	0.038	-0.012
	(0.161)	(0.192)	
Time Deployed: 9-12 Months	0.375	0.149	0.226***
	(0.486)	(0.357)	
Time Deployed: 12-18 Months	0.086	0.125	-0.039
	(0.281)	(0.331)	
Time Deployed: 18-24 Months	0.053	0.192	-0.139***
	(0.224)	(0.394)	
Time Deployed: 24-30 Months	0.158	0.238	-0.080*
	(0.366)	(0.426)	
Time Deployed: 30-36 Months	0.039	0.024	0.015
	(0.195)	(0.154)	
Time Deployed: 36+ Months	0.099	0.091	0.008
	(0.299)	(0.288)	
Postwar Foreign Policy Index	0.056	-0.017	0.073
	(0.950)	(1.015)	
Officers' Leadership Index	-0.190	0.058	-0.249**
	(0.977)	(1.001)	
Unit Has War Information Center	0.493	0.579	-0.085
	(0.502)	(0.494)	
Unit Holds Regular Orientation Meetings	0.250	0.627	-0.377***
	(0.434)	(0.484)	
Interest in War News Index	0.009	-0.003	0.011
	(0.999)	(1.001)	
Local Contact Index	0.028	-0.009	0.037
	(0.938)	(1.019)	

Note: Here we compare those ever exposed to gas training (i.e., one or more exposures) to those never exposed to gas training (i.e., zero exposures).

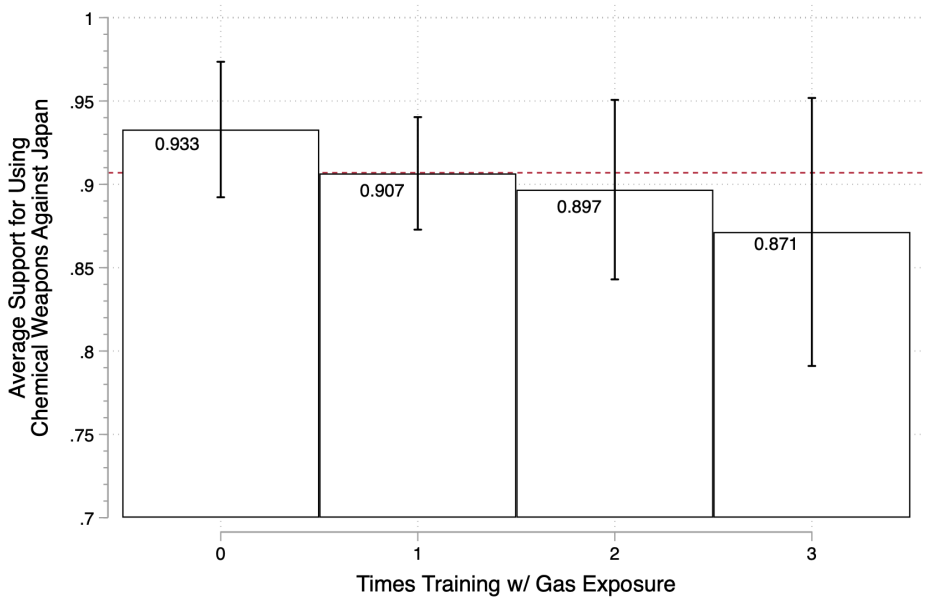
Table A-5: Difference-in-Means: Multiple Gas Exposure vs. Single or No Gas Exposure

	Not Exposed to Gas	Exposed to Gas	Difference-in-Means (Not-Exposed - Exposed)
Schooling: <8th Grade	0.107	0.124	-0.017
	(0.310)	(0.331)	
Schooling: 8th Grade	0.119	0.154	-0.036
	(0.324)	(0.362)	
Schooling: Some High School	0.302	0.234	0.068
	(0.460)	(0.424)	
Schooling: High School	0.342	0.353	-0.011
	(0.475)	(0.479)	
Schooling: College	0.128	0.124	0.003
	(0.334)	(0.331)	
Age: $\leq$18	0.002	0.005	-0.003
	(0.047)	(0.071)	
Age: 19	0.016	0.025	-0.009
	(0.124)	(0.156)	
Age: 20	0.074	0.065	0.009
	(0.262)	(0.247)	
Age: 21	0.065	0.075	-0.010
	(0.247)	(0.263)	
Age: 22	0.110	0.075	0.035
	(0.313)	(0.263)	
Age: 23	0.081	0.080	0.001
	(0.272)	(0.271)	
Age: 24	0.101	0.119	-0.019
	(0.301)	(0.325)	
Age: 25	0.063	0.060	0.003
	(0.243)	(0.238)	
Age: 26-29	0.192	0.169	0.023
	(0.395)	(0.376)	
Age: 30-34	0.186	0.199	-0.013
	(0.389)	(0.400)	
Age: 35+	0.107	0.114	-0.007
	(0.310)	(0.319)	
Rank: PRV./PFC.	0.378	0.433	-0.055
	(0.485)	(0.497)	
Rank: CPL./TCH5.	0.304	0.244	0.060
	(0.461)	(0.430)	
Rank: SGT./TCH4.	0.197	0.164	0.033
	(0.398)	(0.371)	
Rank: SSGT./TCH3.	0.085	0.080	0.005
	(0.279)	(0.271)	
Rank: TSGT./MSGT./1SGT.	0.031	0.050	-0.018
	(0.174)	(0.218)	
Time Deployed: $\leq$3 Months	0.083	0.104	-0.022
	(0.276)	(0.307)	
Time Deployed: 3-6 Months	0.067	0.025	0.042*
	(0.250)	(0.156)	
Time Deployed: 6-9 Months	0.036	0.035	0.001
	(0.186)	(0.184)	
Time Deployed: 9-12 Months	0.228	0.144	0.084*
	(0.420)	(0.352)	
Time Deployed: 12-18 Months	0.114	0.119	-0.005
	(0.318)	(0.325)	
Time Deployed: 18-24 Months	0.132	0.219	-0.087**
	(0.339)	(0.415)	
Time Deployed: 24-30 Months	0.213	0.234	-0.021
	(0.410)	(0.424)	
Time Deployed: 30-36 Months	0.025	0.035	-0.010
	(0.155)	(0.184)	
Time Deployed: 36+ Months	0.098	0.080	0.019
	(0.298)	(0.271)	
Postwar Foreign Policy Index	-0.007	0.016	-0.023
	(1.007)	(0.986)	
Officers' Leadership Index	-0.111	0.247	-0.358***
	(0.963)	(1.039)	
Unit Has War Information Center	0.490	0.711	-0.222***
	(0.500)	(0.454)	
Unit Holds Regular Orientation Meetings	0.443	0.751	-0.308***
	(0.497)	(0.433)	
Interest in War News Index	-0.001	0.002	-0.003
	(1.002)	(0.997)	
Local Contact Index	-0.021	0.046	-0.067
	(0.970)	(1.065)	

Note: Here we compare those with multiple exposure to gas training (i.e., two or more exposures) to those never exposed or only exposed once to gas training (i.e., one or fewer exposures).

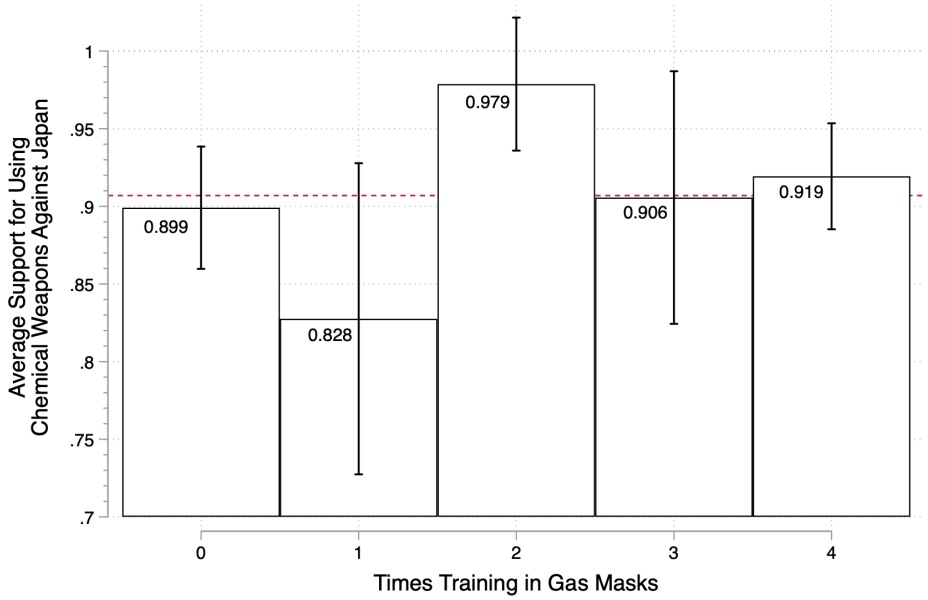
A-10 Mean Support for Use by Exposure and Mask Usage

Figure A-4: Gas Exposure and Attitudes on Chemical Weapons Use



Note: The dashed red line represents the full sample mean level of support. Bars are 95% confidence intervals.

Figure A-5: Gas Mask Training and Attitudes on Chemical Weapons Use



Note: The dashed red line represents the full sample mean level of support. Bars are 95% confidence intervals.

A-11 Multinomial Logistic Estimator

In the main analyses we use linear probability models to estimate the effect of gas training regimens on support for using chemical weapons against Japan. The dependent variable in these specifications is a pooled indicator for willingness to support using chemical weapons against Japan in initiation (first-use) or retaliation (second-use). As described in the manuscript, this choice enables us to capture the effect of gas exposure in mobilizing pro-normative attitudes as opposed to merely pro-doctrinal attitudes. Further, as elaborated in section A-5, arms control advocates in 1944, and throughout the earlier interwar period, supported a total prohibition on the use of chemical weapons. Hence, we believe the pooled quantity of interest is important and relevant.

Nevertheless, it is possible for us to separately and jointly model how gas exposure shaped soldiers' support for first- and second-use of chemical weapons against Japan. To do so we estimate a series of multinomial logistic models. In these specifications we model support for use with a three-point, categorical dependent variable, where 0 equals support for non-use, 1 equals support for second-use, and 2 equals support for first-use. Because we are interested in potential differences between support for second- and first-use of chemical weapons, 0 (i.e., support for non-use) serves as our reference category. Thus, in the multinomial logistic approach we estimate two equations: one for second-use relative to non-use and one for first-use relative to non-use. Multinomial logistic regression allows us to estimate the relative probabilities of our different outcomes from the same sample, rather than from independent samples as in standard logistic regression. It also has the advantage that it makes no assumptions about proportional odds as in an ordered logistic regression. Our specifications include the same set of core covariates included in Table 1. Separation is a known issue in multinomial logistic models (Cook, Niehaus, and Zuhlke, 2018). To avoid separation caused by our flexible stratification approach we omit one additional constituent parameter from the age and months deployed controls in the specifications in Table A-6.

In Table A-6 we report relative risk ratios, which are exponentiated coefficients from our multinomial logistic models. Relative risk ratios represent the ratio of the probability of the respective outcome (i.e., first- or second-use) to the probability of the referent category (i.e., non-use). Ratios less than one indicate lower risk of the respective outcome than of the referent category. Ratios greater than one indicate greater risk of the respective outcome than of the referent category. Across specifications we find that gas exposure reduces support for both second- and first-use. Relative to non-use, gas exposure reduces the probability of support for second-use of chemical weapons by 19-31%, and reduces the probability of support for first-use by 6.4-17%. Estimates on first-use are marginally imprecise in columns 1 (p=0.241) and 4 (p = 0.158).

Table A-6: Multinomial Logistic Estimates of Support for Using Chemical Weapons

	Support for Using Chemical Weapons Against Japan Relative to Support for Non-Use													
	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
	Second-Use (Retaliation)	First-Use (Initiation)	Second-Use (Retaliation)	First-Use (Initiation)	Second-Use (Retaliation)	First-Use (Initiation)	Second-Use (Retaliation)	First-Use (Initiation)	Second-Use (Retaliation)	First-Use (Initiation)	Second-Use (Retaliation)	First-Use (Initiation)	Second-Use (Retaliation)	First-Use (Initiation)
Gas Exposure	0.785***	0.886	0.774***	0.884**	0.782***	0.897*	0.810***	0.936	0.690***	0.830***	0.696***	0.835**	0.693***	0.863**
	(0.060)	(0.092)	(0.046)	(0.044)	(0.040)	(0.057)	(0.053)	(0.044)	(0.035)	(0.059)	(0.030)	(0.062)	(0.036)	(0.063)
Gas Mask Training	1.073	1.108	1.045	1.079	1.046	1.081	1.058	1.096	1.032	1.077	1.040	1.073	1.020	1.045
	(0.072)	(0.072)	(0.083)	(0.079)	(0.091)	(0.096)	(0.087)	(0.087)	(0.078)	(0.095)	(0.077)	(0.095)	(0.087)	(0.110)
Observations	634		634		634		634		634		634		634	
AIC	1056		1004		990		987		984		968		968	
PARAMETERS														
Demographics			Yes		Yes		Yes		Yes		Yes		Yes	
Postwar Foreign Policy					Yes		Yes		Yes		Yes		Yes	
Officers' Leadership							Yes		Yes		Yes		Yes	
Information Access									Yes		Yes		Yes	
Local Contact											Yes		Yes	
Airbase FE													Yes	

Note: * p <.10, ** p <.05, *** p <.01. Robust, airbase-clustered standard errors are in parentheses. Gas exposure is the number of times a respondent was exposed to gas in training. Gas mask training is the number of times a respondent trained wearing a gas mask during normal duties. Demographic controls are: age, education, rank, and months deployed. Postwar foreign policy is an index capturing the extent to which respondents believe 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 news about the war. Local contact is an index capturing interest in and experience visiting Honolulu during leave.

A-12 Standard Errors

In the main analyses we use heteroskedasticity-robust standard errors clustered by airbase. Two reasons motivate this choice. As described in Abadie et al. (2017), the two general reasons for clustering standard errors are experimental design and sampling. An experimental design reason for clustering arises when the assignment mechanism for a treatment of interest is clustered; that is, when clusters of units, rather than individuals, are assigned to a treatment. A sampling design reason for clustering arises when data is sampled from the population of interest using clustered sampling. Both reasons are relevant in our case. On the experimental design side, chemical warfare training regimens and procedures were determined and assigned at the base-level, justifying clustering to allow for within-base correlations in individual responses. On the sampling side, units were quota sampled from bases, and then individuals were randomly sampled from units. In order to make inferences about the broader population of troops in the Central Pacific theater, clustering by base is justified given this sampling strategy.

One concern with clustering standard errors by airbase is that the number of clusters is small. Units were sampled from five bases in the VI Air Service Area Command. Conventional cluster-robust standard error estimates require large-sample assumptions that may not hold with five clusters. Cameron, Gelbach, and Miller (2008) propose the wild cluster bootstrap, which is implemented using software created by Roodman et al. (2019). In Table A-7 we estimate our focal models using the wild cluster bootstrap adjustment. The core effects hold, although the estimated effect of gas exposure in column 1 is marginally imprecise (p = 0.109).

Table A-7: Robustness of Core Results With Wild Cluster Bootstrapping

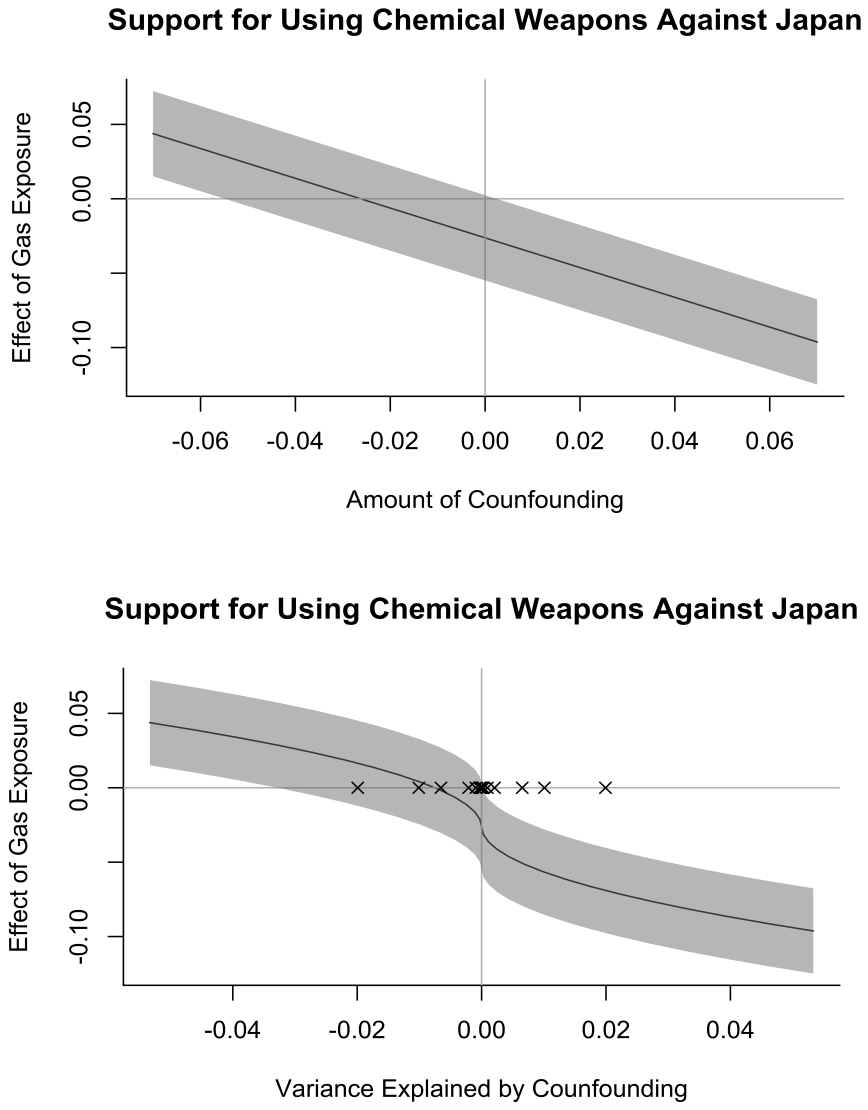
	Support for Using Chemical Weapons Against Japan (=1)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Gas Exposure	-0.018*	-0.018**	-0.017**	-0.014*	-0.027**	-0.026**	-0.026**
	(0.008)	(0.006)	(0.004)	(0.006)	(0.008)	(0.007)	(0.007)
Gas Mask Training	0.007	0.004	0.004	0.005	0.004	0.004	0.002
	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)
Observations	634	634	634	634	634	634	634
AIC	235	208	195	195	187	186	184
PARAMETERS							
Demographics		Yes	Yes	Yes	Yes	Yes	Yes
Postwar Foreign Policy			Yes	Yes	Yes	Yes	Yes
Officers' Leadership				Yes	Yes	Yes	Yes
Information Access					Yes	Yes	Yes
Local Contact						Yes	Yes
Airbase FE							Yes

Note: * p <.10, ** p <.05, *** p <.01. Brackets report airbase-clustered, wild bootstrap 90% confidence intervals. Gas exposure is the number of times a respondent was exposed to gas in training. Gas mask training is the number of times a respondent trained wearing a gas mask during normal duties. Demographic controls are: age, education, rank, and months deployed. Postwar foreign policy is an index capturing the extent to which respondents believe 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 news about the war. Local contact is an index capturing interest in and experience visiting Honolulu during leave.

A-13 Sensitivity Analyses

Using the method described in Blackwell (2014), we implement sensitivity analyses to further probe the selection-on-observables assumption. Taking the main specification from column 7 of Table 1, the effect of an unobserved variable would have to be as large or larger than the effect of gas exposure to attenuate the results. In our setting, it is difficult to think of an unobserved factor that would have such a large effect. The most plausible explanation is that respondents with more gas exposure were more predisposed to oppose chemical weapons use in the first place. Yet this expectation is at odds with historical accounts of military attitudes—and especially Chemical Warfare Service officers' views—toward chemical weapons (Brophy and Fisher, 1959). During WWII, military views were supportive of chemical weapons use for retaliation in-kind, and support was especially high among officers responsible for leading units in chemical training. In our setting, some officers took the initiative to lead their troops in gas exercises more frequently; however, historical accounts indicate these officers are likely to have been *more* rather than less supportive of using chemical weapons. If officers who took the initiative to lead soldiers in gas drills were typically more supportive of use, the results should be conservative and biased downward.

Figure A-6: Sensitivity of Main Estimates



Note: Shaded areas denote 95% confidence intervals. Confounders to the left of the vertical axis would represent situations where gas-exposed respondents were less supportive of using chemical weapons to begin with, while confounding to the right would indicate that gas-exposed respondents were more predisposed to support using chemical weapons against Japan.

A-14 Robustness to Additional Covariates

In our main analyses we control for a host of covariates that may impact attitudes toward chemical weapons, including perceptions about the trajectory of US foreign policy after WWII, attitudes toward officers, access to information about the war effort, and contact with local civilians. In Table A-8 we establish robustness to a number of other controls. Column 1 represents our baseline estimate from column 7 of Table 1 for reference. Column 2 incorporates entropy weights for demographic characteristics to correct for remaining imbalances between the sample and the population of WWII soldiers as described in Table A-1. Column 3 adds controls for details of respondents' chemical warfare training, including their assigned training regimen and type of gas mask. Column 4 adds two indicators of confidence in chemical warfare readiness: confidence in one's gas mask and confidence that one knows what to do in a gas attack. Column 5 adds an indicator for respondents who correctly knew the history of gas use in WWII (i.e., that Japan had employed gas against China but not the US, UK, or Australia). Column 6 adds a proxy for unit cohesion—the frequency with which men talk to one another following orientation meetings. Column 7 adds measures for the perceived importance of gas drills and mask training, and an index of favorability to chemical training activities. Column 8 adds indices of the perceived importance of physical fitness and general military skills training.

Table A-8: Robustness of Core Results With Additional Covariates

	Support for Using Chemical Weapons Against Japan (=1)							
	Baseline	**Additional Controls**						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gas Exposure	-0.026**	-0.028**	-0.032*	-0.025**	-0.026**	-0.026**	-0.023**	-0.027**
	(0.007)	(0.008)	(0.012)	(0.007)	(0.007)	(0.007)	(0.005)	(0.008)
Gas Mask Training	0.002	0.001	0.004	0.002	0.002	0.002	-0.000	0.002
	(0.006)	(0.008)	(0.008)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)
Observations	634	634	634	630	634	634	634	634
AIC	184	182	182	175	180	184	175	178
PARAMETERS								
Demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Postwar Foreign Policy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Officers' Leadership	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Information Access	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Local Contact	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Airbase FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demographic Weights		Yes						
Chemical Training Details			Yes					
Chemical Readiness				Yes				
History of Use					Yes			
Unit Cohesion						Yes		
Chemical Training Importance							Yes	
Military Training Importance								Yes

Note: * p <.10, ** p <.05, *** p <.01. Robust, airbase-clustered standard errors are in parentheses. Gas exposure is the number of times a respondent was exposed to gas in training. Gas mask training is the number of times a respondent trained wearing a gas mask during normal duties. Demographic controls are: age, education, rank, and months deployed. Postwar foreign policy is an index capturing the extent to which respondents believe 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 news about the war. Local contact is an index capturing interest in and experience visiting Honolulu during leave.

A-15 Probit Estimates

In our main analyses we use linear probability models (LPM), which facilitate straightforward interpretation. The draw back of LPMs is that predicted values may fall outside the unit interval [0,1]. We replicate our core results with a probit estimator in Table A-9. One drawback of the probit estimator is that it addresses quasi-complete separation by dropping observations for which predictors are separated by an outcome. This could raise concerns about the changing estimation sample relative to our LPM models. Table A-10 replicates the core LPM results in the probit estimation sample.

Table A-9: Robustness of Core Results Using a Probit Estimator

	Support for Using Chemical Weapons Against Japan (=1)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
use							
Gas Exposure	-0.108**	-0.118***	-0.111***	-0.092***	-0.165***	-0.165***	-0.159***
	(0.045)	(0.024)	(0.015)	(0.025)	(0.031)	(0.026)	(0.029)
Gas Mask Training	0.040	0.030	0.028	0.033	0.026	0.029	0.016
	(0.034)	(0.035)	(0.038)	(0.035)	(0.031)	(0.032)	(0.043)
Observations	634	629	629	629	629	629	629
AIC	395	369	356	355	349	348	346
PARAMETERS							
Demographics		Yes	Yes	Yes	Yes	Yes	Yes
Postwar Foreign Policy			Yes	Yes	Yes	Yes	Yes
Officers' Leadership				Yes	Yes	Yes	Yes
Information Access					Yes	Yes	Yes
Local Contact						Yes	Yes
Airbase FE							Yes

Table A-10: LPM Results Replicate in Probit Estimation Sample

	Support for Using Chemical Weapons Against Japan (=1)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Gas Exposure	-0.019*	-0.018**	-0.017**	-0.014*	-0.027**	-0.027**	-0.026**
	(0.009)	(0.006)	(0.004)	(0.006)	(0.008)	(0.007)	(0.007)
Gas Mask Training	0.007	0.004	0.004	0.005	0.004	0.004	0.002
	(0.005)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)
Observations	629	629	629	629	629	629	629
AIC	237	209	199	198	190	189	188
PARAMETERS							
Demographics		Yes	Yes	Yes	Yes	Yes	Yes
Postwar Foreign Policy			Yes	Yes	Yes	Yes	Yes
Officers' Leadership				Yes	Yes	Yes	Yes
Information Access					Yes	Yes	Yes
Local Contact						Yes	Yes
Airbase FE							Yes

Note: * p <.10, ** p <.05, *** p <.01. Robust, airbase-clustered standard errors are in parentheses. Gas exposure is the number of times a respondent was exposed to gas in training. Gas mask training is the number of times a respondent trained wearing a gas mask during normal duties. Demographic controls are: age, education, rank, and months deployed. Postwar foreign policy is an index capturing the extent to which respondents believe 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 news about the war. Local contact is an index capturing interest in and experience visiting Honolulu during leave.

A-16 Sequential G-estimates

The chief empirical threat to our analyses is selection, whereby respondents more likely to be exposed to gas in training are less supportive of using chemical weapons against Japan for reasons unrelated to gas exposure. As described in Figure A-6, we believe our estimates are actually downward biased because historical accounts suggest officers who ordered their men to participate in gas drills were predisposed to *favor* the use of chemical weapons. To further assuage concerns about selection, we estimate a series of additional two-stage regressions using the sequential g-estimator (Acharya, Blackwell, and Sen, 2016). A number of important factors like interest in news about the war and expectations of postwar foreign policy are likely to affect attitudes on chemical weapons use; however, these are (potentially) post-treatment covariates, so their inclusion may introduce bias (Montgomery, Nyhan and Torres, 2018). The sequential g-estimator allows us to acccount for these covariates by treating them as mediators. In the first-stage, we estimate a saturated model with pre- and (potentially) post-treatment covariates. After recalculating the outcome variable by subtracting the effects of (potentially) post-treatment mediators, the second-stage estimates the average controlled direct effect—the effect of gas exposure on the "demediated" outcome. In column 9 of Table A-11, the following covariates are included as mediators: postwar foreign policy, officers' leadership, attendance at regular orientation meetings, and interest in news about the war. Columns 1-8 provide our benchmark OLS estimates from Table 1 for reference.

Table A-11: Robustness of Core Results Using Sequential G-estimator

	Support for Using Chemical Weapons Against Japan (=1)								
	OLS								**Sequential G-estimation**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Gas Exposure	-0.018*	-0.018**	-0.017**	-0.014*	-0.027**	-0.026**	-0.026**	-0.026*	-0.024*
	(0.008)	(0.006)	(0.004)	(0.006)	(0.008)	(0.007)	(0.007)	(0.015)	(0.015)
Gas Mask Training	0.007	0.004	0.004	0.005	0.004	0.004	0.002	0.002	0.001
	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)
Observations	634	634	634	634	634	634	634	634	634
AIC	235	206	195	195	187	186	184	194	283
PARAMETERS									
Airbase Clustered SEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Demographics		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Postwar Foreign Policy			Yes	Yes	Yes	Yes	Yes	Yes	Yes
Officers' Leadership				Yes	Yes	Yes	Yes	Yes	Yes
Information Access					Yes	Yes	Yes	Yes	Yes
Local Contact						Yes	Yes	Yes	Yes
Airbase FE							Yes	Yes	Yes

Note: * p <.10, ** p <.05, *** p <.01. Robust standard errors are in parentheses. Gas exposure is the number of times a respondent was exposed to gas in training. Gas mask training is the number of times a respondent trained wearing a gas mask during normal duties. Demographic controls are: age, education, rank, and months deployed. Postwar foreign policy is an index capturing the extent to which respondents believe 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 news about the war. Local contact is an index capturing interest in and experience visiting Honolulu during leave.

A-17 Compliance With Training Assignment

Units in the survey were assigned one of two chemical warfare training regimens: gas masks or gas exposure in drills. Nevertheless, as described in section A-4, compliance with treatment assignment was imperfect, since many officers ordered their men to participate in both mask and gas exercises. The main purpose of these deviations from protocol was to break the monotony of routine. Overall compliance rates in the sample are $\approx$ 53%. To address non-compliance, we exploit weights for the probability of compliance. Specifically, we fit a probit model of treatment compliance, and generate respondent-level predicted probabilities of compliance based on this model. Then, we re-estimate our core specifications while scaling estimates by the probability of compliance with assigned treatment. The main estimates are robust, though imprecise in column 1 (p = 0.193).

Table A-12: Weighting Estimates by the Probability of Training Compliance

	Support for Using Chemical Weapons Against Japan (=1)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Gas Exposure	-0.024	-0.026*	-0.024*	-0.023*	-0.043*	-0.043*	-0.052*
	(0.015)	(0.010)	(0.010)	(0.011)	(0.019)	(0.019)	(0.022)
Gas Mask Training	0.009	0.011	0.011	0.011	0.010	0.010	0.012
	(0.006)	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)	(0.010)
Observations	634	634	634	634	634	634	634
AIC	214	185	173	173	159	159	154
PARAMETERS							
Pr(Compliance = 1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demographics		Yes	Yes	Yes	Yes	Yes	Yes
Postwar Foreign Policy			Yes	Yes	Yes	Yes	Yes
Officers' Leadership				Yes	Yes	Yes	Yes
Information Access					Yes	Yes	Yes
Local Contact						Yes	Yes
Airbase FE							Yes

Note: * p <.10, ** p <.05, *** p <.01. Robust, airbase-clustered standard errors are in parentheses. Gas exposure is the number of times a respondent was exposed to gas in training. Gas mask training is the number of times a respondent trained wearing a gas mask during normal duties. Demographic controls are: age, education, rank, and months deployed. Postwar foreign policy is an index capturing the extent to which respondents believe 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 news about the war. Local contact is an index capturing interest in and experience visiting Honolulu during leave.

A-18 Compliance in a Conditional Mixed Process Setting

Exploiting compliance weights is one possible way to estimate the effect of gas exposure among treatment compliers. An alternative is the conditional mixed process (CMP) estimator (Roodman, 2011). Specifically, the CMP estimator allows us to jointly estimate multiple equations with correlated error processes. CMP uses a maximum likelihood approach to estimate the system of equations. In our setting, we jointly estimate two least-squares equations: (1) a first-stage that models compliance status as a function of demographic covariates, officers' leadership, and assigned training regimen; and (2) a second-stage that models support for using chemical weapons against Japan conditional on treatment compliance (i.e., being gas-exposed if assigned to train in gas drills and mask-exposed if assigned to train with gas masks). Table A-13 reports second-stage results of these models, with columns following the specification of covariates from our main estimates in Table 1. The estimate is modestly imprecise in column 1 (p = 0.153).

Table A-13: Robustness of Core Results Using a Conditional Mixed Process Estimator

	Support for Using Chemical Weapons Against Japan (=1)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
use_comply							
Gas Exposure	-0.029	-0.045***	-0.046***	-0.047***	-0.068***	-0.068***	-0.090**
	(0.021)	(0.014)	(0.013)	(0.012)	(0.021)	(0.021)	(0.039)
Gas Mask Training	0.010	0.013	0.012	0.012	0.011	0.011	0.015
	(0.009)	(0.009)	(0.008)	(0.008)	(0.009)	(0.009)	(0.011)
Observations	648	648	648	648	648	648	648
AIC	600	572	563	563	554	554	545
PARAMETERS							
Demographics		Yes	Yes	Yes	Yes	Yes	Yes
Postwar Foreign Policy			Yes	Yes	Yes	Yes	Yes
Officers' Leadership				Yes	Yes	Yes	Yes
Information Access					Yes	Yes	Yes
Local Contact						Yes	Yes
Airbase FE							Yes

Note: * p <.10, ** p <.05, *** p <.01. Robust, airbase-clustered standard errors are in parentheses. Gas exposure is the number of times a respondent was exposed to gas in training. Gas mask training is the number of times a respondent trained wearing a gas mask during normal duties. Demographic controls are: age, education, rank, and months deployed. Postwar foreign policy is an index capturing the extent to which respondents believe 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 news about the war. Local contact is an index capturing interest in and experience visiting Honolulu during leave.

A-19 Inverse Probability of Treatment Weights

In some models we scale estimates using inverse probability of treatment weights (IPTW). Following Hernán and Robins (2020), we construct these by: (1) estimating a probit model of multiple gas exposure; (2) predicting the conditional probability of multiple gas exposure for each respondent; and (3) generating IPTW such that:

$$\text{IPTW} = \begin{cases} Pr(MultipleGasExposure = 1|Covariates), & \text{if } MultipleGasExposure = 1 \\ 1 - Pr(MultipleGasExposure = 1|Covariates), & \text{if } MultipleGasExposure = 0 \end{cases}$$

IPTW are well-behaved, with a median around 1 (median = 1.481). The main estimates are robust, though modestly imprecise in column 1 (p = 0.159).

Table A-14: Weighting Estimates by the Inverse Probability of Treatment

	Support for Using Chemical Weapons Against Japan (=1)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Gas Exposure	-0.033	-0.031*	-0.030*	-0.030*	-0.034*	-0.034*	-0.039*
	(0.019)	(0.012)	(0.012)	(0.013)	(0.015)	(0.015)	(0.015)
Gas Mask Training	0.006	0.002	0.002	0.003	-0.002	-0.002	-0.005
	(0.013)	(0.008)	(0.007)	(0.007)	(0.008)	(0.008)	(0.009)
Observations	634	634	634	634	634	634	634
AIC	374	311	292	292	254	254	242
PARAMETERS							
IPTW	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demographics		Yes	Yes	Yes	Yes	Yes	Yes
Postwar Foreign Policy			Yes	Yes	Yes	Yes	Yes
Officers' Leadership				Yes	Yes	Yes	Yes
Information Access					Yes	Yes	Yes
Local Contact						Yes	Yes
Airbase FE							Yes

Note: * p <.10, ** p <.05, *** p <.01. Robust, airbase-clustered standard errors are in parentheses. Gas exposure is the number of times a respondent was exposed to gas in training. Gas mask training is the number of times a respondent trained wearing a gas mask during normal duties. Demographic controls are: age, education, rank, and months deployed. Postwar foreign policy is an index capturing the extent to which respondents believe 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 news about the war. Local contact is an index capturing interest in and experience visiting Honolulu during leave.

A-20 Coarsened Exact Matching

Following Iacus, King, and Porro (2012), we implement coarsened exact matching. In panel A we match all gas-exposed and non-exposed respondents on the key observable predictors of gas exposure. In panel B we match individuals exposed to gas multiple times on the key observable predictors of multiple gas exposure. We match on: age, education, time deployed overseas, rank/grade, indicators for whether a respondent's unit had orientation meetings and a war information center, an indicator for each unit's assigned training regimen, and an index of respondent interest in war news. Estimates are modestly imprecise in columns 1 (p = 0.126) and 4 (p = 0.133) of panel B.

Table A-15: Coarsened Exact Matching

Panel A:	**Support for Using Chemical Weapons Against Japan (=1)**						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Gas Exposure	-0.021*	-0.020**	-0.018***	-0.016**	-0.028**	-0.028**	-0.028***
	(0.008)	(0.005)	(0.003)	(0.005)	(0.007)	(0.007)	(0.006)
Gas Mask Training	0.007	0.005	0.005	0.006	0.005	0.005	0.003
	(0.005)	(0.007)	(0.007)	(0.006)	(0.006)	(0.005)	(0.006)
Observations	634	634	634	634	634	634	634
AIC	222	194	183	182	175	174	172

Panel B:	**Support for Using Chemical Weapons Against Japan (=1)**						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Gas Exposure	-0.019	-0.018**	-0.017**	-0.013	-0.026**	-0.026**	-0.025**
	(0.010)	(0.006)	(0.005)	(0.007)	(0.009)	(0.008)	(0.008)
Gas Mask Training	0.007	0.004	0.004	0.006	0.004	0.005	0.002
	(0.006)	(0.007)	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)
Observations	634	634	634	634	634	634	634
AIC	234	200	188	185	177	175	173
PARAMETERS							
CEM	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demographics		Yes	Yes	Yes	Yes	Yes	Yes
Postwar Foreign Policy			Yes	Yes	Yes	Yes	Yes
Officers' Leadership				Yes	Yes	Yes	Yes
Information Access					Yes	Yes	Yes
Local Contact						Yes	Yes
Airbase FE							Yes

Note: * p <.10, ** p <.05, *** p <.01. Robust, airbase-clustered standard errors are in parentheses. Gas exposure is the number of times a respondent was exposed to gas in training. Gas mask training is the number of times a respondent trained wearing a gas mask during normal duties. Demographic controls are: age, education, rank, and months deployed. Postwar foreign policy is an index capturing the extent to which respondents believe 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 news about the war. Local contact is an index capturing interest in and experience visiting Honolulu during leave.

A-21 Heterogeneous Effects of Gas Exposure by Pearl Harbor Experience

The sample we study is comprised of soldiers in service/non-combat roles in the VI Air Service Area Command. As such, none of our respondents are likely to have experienced direct combat, such as service in the Battles of the Coral Sea, Midway, or the Solomon Islands campaign, prior to survey fielding. However 78 respondents—roughly 12% of our sample—had been deployed in Hawai'i on or before December 1941. These respondents are likely to have had direct exposure to the Japanese attacks on Pearl Harbor on December 7, 1941, and potentially engaged in combat in defense of Army facilities on that date. In Table A-16 we consider whether (potential) experience of the Pearl Harbor attacks moderated the effect of gas exposure.

Column 1 represents our baseline estimate from column 7 of Table 1 for reference. In columns 2-8 we interact our indicators for gas exposure and gas mask training with an indicator for respondents who experienced Pearl Harbor by virtue of having deployed in Hawai'i on or before December 1941. We construct this indicator using information on respondents' number of months deployed. Columns 2-8 also incorporate covariates following the specifications in Table 1. Results suggest that while gas exposure reduced support for using chemical weapons against Japan on average, soldiers (potentially) exposed to combat during Pearl Harbor became distinguishably more supportive of using chemical weapons against Japan. Future work should continue to explore this finding. One possibility is that the experience of Pearl Harbor hardened attitudes against Japan (Grossman, Manekin, and Miodownik, 2015), disposing respondents to support resorting to normatively proscribed weapons. Another possibility is that the experience of Pearl Harbor evoked an emotional response (Kupatadze and Zeitzoff, 2021) that lowered psychological inhibitions (Marshall, 1947; Usry, 2019) against using chemical weapons.

Table A-16: Heterogeneous Effects of Gas Exposure by Pearl Harbor Experience

	Support for Using Chemical Weapons Against Japan (=1)							
	Baseline	**Effect Heterogeneity by Pearl Harbor Experience**						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Gas Exposure	-0.026**	-0.025**	-0.024**	-0.021**	-0.035**	-0.034***	-0.035***	-0.035**
	(0.007)	(0.007)	(0.006)	(0.007)	(0.008)	(0.007)	(0.006)	(0.016)
Gas Exposure x Pearl Harbor		0.049	0.054*	0.053	0.058*	0.056**	0.057**	0.057*
		(0.025)	(0.025)	(0.025)	(0.022)	(0.020)	(0.019)	(0.033)
Gas Mask Training	0.002	0.001	0.001	0.002	0.001	0.001	-0.000	-0.000
	(0.006)	(0.008)	(0.008)	(0.008)	(0.006)	(0.006)	(0.007)	(0.007)
Gas Mask Training x Pearl Harbor		0.025	0.027	0.029	0.028	0.028	0.028	0.028
		(0.017)	(0.015)	(0.015)	(0.014)	(0.013)	(0.014)	(0.019)
Observations	634	634	634	634	634	634	634	634
AIC	184	205	192	191	183	182	180	194
PARAMETERS								
Airbase Clustered SEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Postwar Foreign Policy	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Officers' Leadership	Yes			Yes	Yes	Yes	Yes	Yes
Information Access	Yes				Yes	Yes	Yes	Yes
Local Contact	Yes					Yes	Yes	Yes
Airbase FE	Yes						Yes	Yes

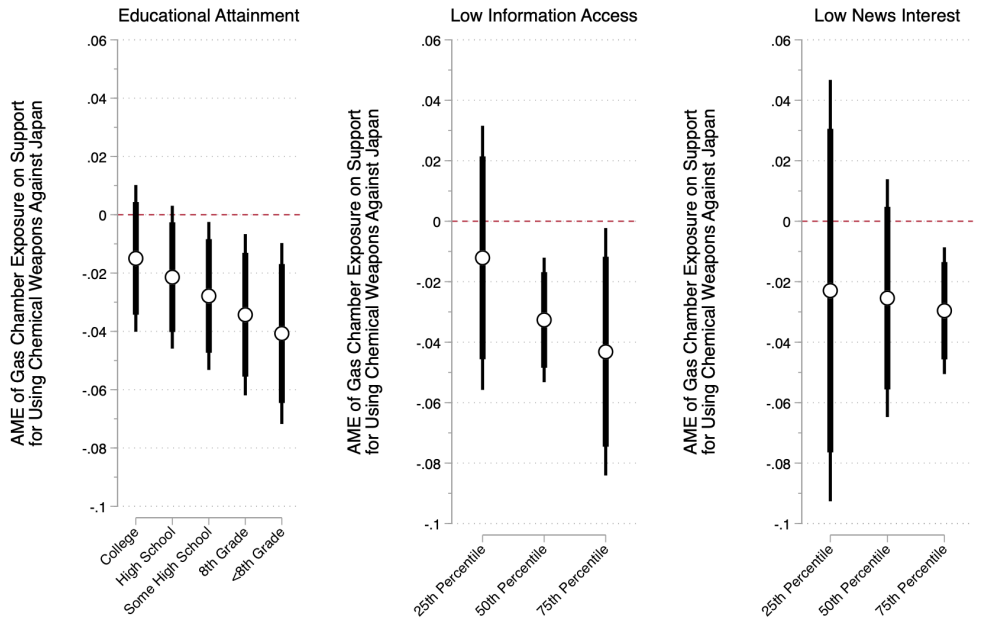
Note: * p <.10, ** p <.05, *** p <.01. Robust standard errors are in parentheses. Gas exposure is the number of times a respondent was exposed to gas in training. Gas mask training is the number of times a respondent trained wearing a gas mask during normal duties. Pearl Harbor is an indicator for respondents deployed in Hawai'i on or before December 7, 1941, and hence exposed to the Pearl Harbor attack. Demographic controls are: age, education, rank, and months deployed. Postwar foreign policy is an index capturing the extent to which respondents believe 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 news about the war. Local contact is an index capturing interest in and experience visiting Honolulu during leave.

A-22 Heterogeneous Effects of Gas Exposure by Information

It remains possible that the political impact of personalized information varies according to the amount of pre-existing, abstract information individuals hold about a topic. When forming political preferences about complex subjects, individuals weigh diverse information on hand (Nisbett and Ross, 1980). For people with extensive abstract information, for instance because they are better educated, personalized information is relatively less important to preference formation (Feldman and Sigelman, 1985). Put differently, personalized information from real-world experiences receives relatively less weight when individuals also hold ample abstract information, like factual knowledge about a relevant subject. In contrast, salient information like that gleaned from personal experiences is more understandable for and important in shaping the preferences of less educated individuals. This raises the possibility that the effect of exposure to chemical weapons on opposition to their use is larger for less educated and less informed individuals.

We test this heterogenous-effect expectation in Figure A-7. Taking the core specification from column 7 of Table 1, we interact our measures of gas exposure and gas mask training with measures of: educational attainment, news interest, and access to information about the war. For interpretability, all measures are reverse-scaled, so higher values reflect less abstract information. Estimates show that gas exposure exerted a larger, distinguishable negative effect among respondents with less abstract information. Whereas an additional gas exposure had no distinguishable effect among college-educated troops, each exposure reduced support among the least educated troops by about 4pp. Similarly, for respondents in the top quartile of the information access and new interest indices, there was no effect of gas exposure; for respondents in the bottom quartile of these indices, each additional gas exposure reduced support for using chemical weapons by 3-4pp.

Figure A-7: Personal Experiences Exert More Impact on Attitudes of Less Informed Respondents



Note: Thick and thin bars are 90 and 95% confidence intervals. The dashed red line marks 0. Plots depict the average marginal effect of one additional gas exposure across levels of the variable denoted in the plot title. Educational attainment is an ordinal measure of the highest level of education a respondent achieved. Information access is a continuous, inverse covariance-weighted index of respondent access to and engagement with a war information center. News interest is a continuous, inverse covariance-weighted index of respondent interest in news. All moderators are reverse-scaled so higher values indicate worse access to abstract information (e.g., less educated, less interested in the news).

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