How Moral Foundations Shape Public Approval of Nuclear, Chemical, and Conventional Strikes

New Evidence from Experimental Surveys

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Abstract

In this article, we present the results of two survey experiments on public support for nuclear, chemical, and conventional strikes. We examined how moral values of individuals interact with the approval of different kinds of strikes and with the effects of information about the ingroup and out-group fatalities. Our results show that while the public is more averse to the employment of chemical weapons than to the conduct of nuclear or conventional strikes, the overall relationship between strike approval and the individuals' moral values does not differ across the three experimental treatments. In addition, we found that individuals' scores in so-called "binding" moral values affect the sensitivity of the public for in-group fatalities. Findings of our paper contribute to the broader debates in the field about the strength and nature of the norms against the use of nuclear and chemical weapons, and about the role of morality in the public attitudes to the use of military force.

Keywords: moral foundations theory; public attitudes; nuclear weapons; chemical weapons; survey experiment

Introduction

Nuclear weapons are usually set aside as a particularly abhorrent category of arms, whose employment in warfare is virtually unthinkable save for the most extreme circumstances (Tannenwald 1999; 2007; Gizewski 1996; Farrell and Lambert 2001; Quester 2006; Carranza 2018). Some of the recent findings, however, suggest that the general public may be less averse to the military use of nuclear weapons than previously thought (Press, Sagan, and Valentino 2013; Sagan and Valentino 2017; Haworth, Sagan, and Valentino 2019). According to Rathbun and Stein (2020), the preference of individuals for nuclear strikes is closely related to their moral values – those with high scores in the “binding moral foundations” of authority, in-group loyalty, and social purity are more likely to approve the military employment of nuclear weapons, while those with high scores in “individualizing moral foundations” of care and fairness are less likely to do so.

In this article, we present the results of our two survey experiments on nuclear and chemical weapons strikes that explore how moral values interact with the approval of different kinds of strikes and with the effects of information about the in-group and out-group fatalities. In two online studies on a large sample of U.S. adults, we presented our participants with randomly-assigned hypothetical scenarios involving nuclear, chemical, or conventional strikes, varied the number of the U.S. and foreign fatalities, and measured the level of strike approval together with the individuals’ scores in moral foundations (Haidt 2007; Graham, Haidt and Nosek 2009).

Our results show, first, that other things being equal, the general public is more averse to the use of nuclear weapons than to the conduct of massive conventional strikes, yet still see their hypothetical use more approvingly than the limited employment of chemical weapons. Second, while the overall support for different kinds of strikes – nuclear, chemical, and conventional – differs in absolute numbers, the association between the individual’s moral foundations scores and the level of strike approval remained the same across the three experimental conditions. Third, we show that participants high in the binding

foundation are more likely to opt for the nuclear strike regardless of the number of American fatalities in the case of a non-nuclear option, whereas those low in the binding foundation approve the nuclear strike only when the expected U.S. fatalities are high.

Morality and the (Non-)Use of Nuclear and Chemical Weapons

Previous experimental research into public attitudes to nuclear weapons usually presented the participants in the experiments with scenarios involving either the hypothetical use of nuclear weapons or conventional strikes (Press, Sagan, and Valentino 2013; Sagan and Valentino 2017; Rathbun and Stein 2020). The first aim in this article is to provide a unique comparative perspective by bringing the issue of chemical weapons into the analysis. Chemical weapons have long been discursively clustered and stigmatized together with nuclear weapons as illegitimate “weapons of mass destruction” (Cole 1998; Shamai 2015). Nevertheless, while the norms against the use of nuclear and chemical weapons do share some common characteristics, they are also qualitatively distinct in many important aspects, they have changed significantly over time, and their development varies with respect to their acceptance and meaning (Price and Tannenwald 1996). As such, particularly in light of the recent violations of the chemical weapons “taboo” in Syria (Bentley 2016; Geis and Schlag 2017; Price 2018), it appears timely to make a contemporary inquiry into the nature and the parallel development of the norms against nuclear and chemical weapons (cf. Price 1995, 1997).

To examine how the attitudes of individuals towards the use of nuclear and chemical weapons correspond to their moral values, we draw on the Moral Foundations Theory (MFT) from moral psychology that identifies basic moral foundations that are predispositions of individuals to intuitively perceive certain acts and behaviors as morally relevant (Haidt 2007; Graham, Haidt and Nosek 2009; Graham *et al.* 2013). The individualizing moral foundations concern the behaviors that can harm or benefit individuals, whereas the binding foundations are related to the well-being of larger groups. According to the MFT, when a morally relevant act is recognized by an individual, a psychological system associated with the appropriate moral foundation produces fast, automatic, emotion-driven judgment (Haidt 2001). Although this automatic

reaction seems similar to simple judgments of liking and disliking (Koleva *et al.* 2012), it also has some distinct qualities: an individual perceives the moral judgment not as a matter of mere personal preference, but as a universally valid truth. Furthermore, the moral judgment immediately motivates action – for example, to praise, support, and imitate “good” behavior, or to condemn, prevent, and punish “bad” behavior. As such, intuitive moral judgments originating from moral foundations are similar to the automatic responses produced by System 1 thinking described by Kahneman (2003) and other dual-process theorists (Chaiken and Trope 1999): they are fast, effortless, relatively stable, and mostly adaptive (Gigerenzer 2008; Haidt and Kesebir 2010). All of these features enable a smoother and more reliable translation of moral concerns into moral behavior than would be possible if moral judgments were only the products of rational, reflective deliberations. Slower (and energetically demanding) deliberate moral reasoning only occurs *after* the brain has already intuitively judged the act and pre-prepared a specific behavioral response (Haidt 2001). The main purpose of moral reasoning is therefore to provide rational justification that supports the original intuition (Haidt and Kesebir 2010). In consequence, any meaningful dialogue between proponents of different moral judgments is extremely difficult (cf. Feinberg and Willer 2013).

However, if moral foundations are innate and shared by people across different cultures, how is it possible that individuals differ in their moral judgments? Research in moral psychology suggests that whereas all people are born with “drafts” of all moral foundations, these foundations are eventually modified by differences in personality characteristics, individual experiences, and cultural influences during socialization. In consequence, the moral foundations of individuals differ in their form and sensitivity. When one’s moral foundation is less developed, the individual does not perceive issues related to the foundation as morally relevant and is not particularly sensitive to the violations of respective norms. On the other hand, those with a highly developed moral foundation will react strongly to even small transgressions concerning the given foundation (Haidt and Joseph 2004; Graham, Haidt and Nosek 2009).

Previous studies have established that there is a general relationship between individuals' scores in these moral foundations and their willingness to approve the use of force in world politics: individuals with highly developed individualizing moral foundations are more averse to the use of force, while those with stronger binding moral intuitions are more likely to support it (Kertzer *et al.* 2014). We propose that if there are any specific moral barriers to the use of nuclear and chemical weapons – that is, nuclear and chemical weapons “taboo” (Price and Tannenwald 1996) – we should observe not only stronger disapproval of the use of nuclear and chemical weapons, but also a stronger association of individualizing moral foundations with the disapproval of their employment than with the disapproval of conventional strikes. Our theoretical expectation is that participants with highly developed individualizing moral foundations will be particularly averse to the employment of nuclear and chemical weapons, as they intuitively perceive them as indiscriminate weapons with particularly horrifying impact on individuals (Price and Tannenwald 1996; Shamai 2015). As such, we hypothesize that there will be an interaction between the type of the strike and individualizing moral foundations, namely that the negative relationship between the individualizing foundations scores and the level of strike approval will be stronger for chemical and nuclear strike than for the conventional strike.

At the same time, we would also expect that participants with high scores in binding foundations would be more concerned about the protection of their in-group and would, therefore, perceive the use of nuclear and chemical weapons more approvingly if they see it as means to limit or completely eliminate the prospective damage to the members of this in-group. According to Rathbun and Stein (2020), the “binders” are also more likely to perceive the symbolic value of nuclear weapons and are more supportive of their use as an instrument of retribution. As such, we hypothesize that there will be an interaction between the type of the strike and binding moral foundations, namely that the positive relationship between the binding foundations scores and the level of the strike approval will be stronger for chemical and nuclear strike than for the conventional strike.

The third aim of our research concerns the effects of information about the in-group and out-group fatalities on approval of the military strikes. Previous studies have established that the public is less willing to support the use of force when such action would result in a high number of in-group fatalities (Baum and Groeling 2010; Eichenberg 2005; Gartner 2008). The research remains less conclusive on the effect of out-group fatalities, as some authors observe that civilian casualties do not seem to strongly affect public support for the use of force (Larson and Savych 2006; Tirman 2011). We hypothesize that the information about the number of expected fatalities will have a different impact on participants in relation to their scores in moral foundations, namely those who score high in individualizing moral foundations are concerned about the harm inflicted on others in general, while the binders are concerned mainly about the harm done to the members of their in-group.

Experimental Design

We conducted two online survey experiments, partially based on studies conducted by Press, Sagan, and Valentino (2013) and Sagan and Valentino (2017),¹ on the Amazon Mechanical Turk (AMT) platform.² After excluding participants who failed to correctly answer all attention-check items or finished the survey too quickly (< 120 s), 1,394 U.S. adults (57.5% males) remained in the first experiment.³ In this study, we randomly divided the participants into three experimental conditions. In each condition, we presented them

¹ The similarities and differences between our two studies and Press, Sagan, and Valentino (2013) and Sagan and Valentino (2017) are elaborated in more detail in Appendix 1.

² The composition of AMT respondents partially differs from the composition of a general U.S. population, in the sense of being biased more towards male, educated, younger, and liberal respondents (Paolacci and Chandler 2014; see also Huff and Tingley 2015). Nevertheless, meta-studies suggest that despite imperfect demographic representation, the surveys conducted on the AMT platform still provide very solid representative results with respect to the U.S. population (Dupuis, Endicott-Popovsky and Crossler 2012; Clifford, Jewell and Waggoner 2015). This claim can be also demonstrated with our findings, which managed to replicate earlier studies (Press, Sagan and Valentino 2013; Sagan and Valentino 2017) in many key aspects, despite the difference in the method of data collection. Moreover, our analysis checks for, and isolates, the factors of gender, education, age, and political partisanship in individual models.

³ Participants who finished the survey too quickly and/or failed attention check questions likely did not pay sufficient attention to the presented materials and therefore their data provide only noise rather than useful information. Results of both studies remain qualitatively the same when all participants are included in analyses.

with a short description of a hypothetical past U.S. military intervention against an Al Qaeda WMD-development facility in Afghanistan in 2010. The U.S. attack in the scenario caused 1,000 collateral civilian deaths and 1,200 injuries, but potentially prevented an estimated 50,000 to 70,000 deaths if the WMDs developed by the terrorist had been used in attacks against civilian targets. The description differed among the three groups in the kind of attack used against the terrorist facility: it was either a nuclear, chemical, or conventional air strike. In all three conditions, we told the participants that the strike was necessary to ensure the destruction of the facility.⁴ Participants then evaluated their approval of the operation, filled the Moral Foundations Questionnaire (Graham et al. 2011), and answered attention check items and further socio-demographic questions (see Appendix 3 for the full wording of all items used in the first study).

For the second study, we conducted an additional survey experiment via AMT on an overall sample of 1,263 adult U.S. residents. After excluding participants who failed to correctly answer all attention-check items, exactly 1,000 participants (55.2% males) remained. Participants read a short vignette describing a conflict between Iran and the United States, which escalated to a full-scale war after the discovery of Iran's clandestine nuclear program and the attack on U.S. aircraft carrier by Iranian forces in response to U.S. economic sanctions. After three months, the ground invasion by the U.S. army eventually slowed down, with 10,000 U.S. fatalities recorded. At that point, the U.S. government faces a choice: either to continue with a ground war or to conduct a "shock" nuclear strike on a large Iranian city. We randomly varied two aspects of the scenario in a full-factorial design: the number of U.S. military fatalities in the case of the ground war (20,000 or 80,000) and the number of Iranian civilian fatalities in the case of the nuclear strike (100,000 or 2,000,000) – see Appendix 4 for the full wording of the scenarios and items used in the second study. The participants in each condition answered which option they would prefer and how much they would approve the nuclear strike if the United States had decided to conduct it. Participants then completed the rest of the survey in the same way as in our first study.

⁴ Descriptions of the scenarios are available in Appendix 2.

Results

In the first study, participants were more likely to approve the conventional strike (64 %) than the nuclear (50%) or chemical strike (41%). The approval of the chemical strike was the lowest of all three evaluated strikes (see Figure 1).

Figure 1. Approval of Strike.

Note: Numbers represent the percentage of participants who approved the strike in each group. $N = 1394$. Error bars represent 95% confidence intervals (CI). Differences between all conditions are significant at $p < .01$.

Building on Press, Sagan, and Valentino (2013), we followed up with a binary logistic regression analysis with approval or disapproval as a dependent variable, and experimental condition, education, political partisanship, political interest, income, age, and gender as predictors (see Table S1 in Appendix 6). In line with the previous analysis, the regression coefficients for both the chemical and nuclear strike conditions were found to be significant. However, there was no significant interaction between the condition and any of the remaining predictors, indicating that their effects on the approval do not differ based on the type of the attack (all p -values $> .2$). Identifying as Republican and having a higher household income was

associated with a higher approval of the strike in general. The remaining predictors were not significantly related to the approval.

Next, we added the individualizing and binding foundations⁵ to the logistic model and found that they were significantly related to the approval of the military strike: participants scoring high in the individualizing foundations were less likely to approve of the strike, while participants high in binding foundations were more likely to approve of it (see Table S2 in Appendix 6). However, there was no significant interaction between the condition and either foundation, indicating that their effects on the approval do not differ based on the type of strike (see Figure 2 and Table S3 in Appendix 6). We therefore found no support for the notion that evaluation of the nuclear or chemical weapons use is more strongly dependent on moral values than evaluation of the conventional strike. All previously significant predictors remained significant, although the coefficient associated with the Republican partisanship was substantially reduced in magnitude.

Figure 2.

Note: Associations between individualizing (A) and binding (B) moral foundations (MF) scores and the probability of approval of each type of strike. $N = 1394$.

⁵ See Appendix 5 for the details of moral foundations scores computation.

The findings of the first experimental survey demonstrate that there is a significant relationship between the level of approval for nuclear, chemical, and conventional strikes, and individual scores in moral foundations. Like previous studies (Press, Sagan and Valentino 2013; Sagan and Valentino 2017), we also found Republican partisanship to be a significant predictor of public attitudes to military strikes. While our results indicate that some variation explained by the moral foundations were previously captured by this variable, the moral foundations clearly add unique predictive information that was not captured by models in studies conducted by Sagan and his colleagues.

In the second study, the number of fatalities influenced the participants' preference for and approval of the nuclear strike in an expected way (see Figure 3). That is, participants viewed the nuclear strike more negatively when it would lead to a higher number of Iranian fatalities and when the alternative would result in a lower number of U.S. fatalities. Both effects are significant for both variables (p -values < .05), as indicated by logistic regression models with the experimental factors as predictors (see Table S4 in Appendix 6). Their interaction was not significant, which suggests that both main effects of the numbers of fatalities are purely additive (see Table S5 in Appendix 6).

Figure 3. Approval and Preference of the Nuclear Strike. Numbers represent the percentage of participants who approved / preferred the strike in each group. $N = 1000$. Error bars represent 95% CI.

In the next step, we added socio-demographic variables as predictors to the logistic regression models, namely education, political partisanship, political interest, income, age, and gender. From these, only the Republican partisan identity was significantly related to the preference for and approval of the nuclear strike (see Tables S6 and S7 in Appendix 6).

In turn, we added the individualizing and binding foundations variables as predictors to the models. As in the previous study, both foundations significantly predicted both preference for and approval of the nuclear strike. Moreover, we tested whether there are any significant two-way interactions between the number of fatalities and moral foundations. We found that for both preference and approval, the interaction between the number of U.S. fatalities and the binding foundation was significant (see Tables S8 and S9 in Appendix 6). Detailed analysis of the relationship revealed that participants high in the binding foundation are more likely to prefer and approve the nuclear strike regardless of the number of U.S. fatalities in the case of a non-nuclear option. Those low in the binding foundation are more sensitive to the information and prefer

and approve the nuclear strike with higher probability only when the expected U.S. fatalities are high (see Figures S1 and S2 in Appendix 6).

Discussion

Similarly to previous findings by Press, Sagan, and Valentino (2013) and Sagan and Valentino (2017), our results demonstrate a relatively high support for nuclear strikes (50% approval), which does not correspond to the idea of a widespread, categorical “taboo” – at least not among the sampled American public. Interestingly, participants judged the nuclear strike statistically significantly more approvingly than the chemical strike (50% / 41%), which suggests that the public aversion against chemical weapons use may be stronger than the one against nuclear weapons use. This could be possibly explained by the fact that it has been over seven decades since the world experienced the military use of nuclear weapons, yet people have been able to see the horrifying effects of chemical weapons repeatedly in the media in recent years, primarily in the context of their use in Syrian civil war.

Despite differences in absolute numbers, however, the overall dynamics concerning the relationship between strike approval and the individuals’ moral foundations holds firmly across all three types of military strike. In other words, disapproval of nuclear and chemical strikes is associated with the moral foundations of individuals in the same way as disapproval of a conventional strike. This means that we did not find any evidence of any specific moral foundations-related barriers connected with the use of nuclear or chemical weapons, suggesting that the public does not necessarily separate them as a qualitatively distinct category of immoral weapons, which use by civilized states is virtually unthinkable – as research into nuclear and chemical weapons “taboos” would suggest (Price and Tannenwald 1996). As such, although more research is certainly required to better understand and conceptualize nuclear and chemical weapons non-use in world politics, at least the attitudes of our respondents suggest that the non-use might

indeed be closer to a time-honored – and possibly quite fragile – tradition (Sagan 2004; Paul 2009; Gibbons and Lieber 2019).

With respect to the effects of information about the in-group and out-group fatalities on approval of the military strikes, our second study showed that a higher number of U.S. military fatalities in the case of a prospective ground war significantly increased the approval of a nuclear strike among those with lower levels of binding foundations, while it had no effect on those scoring high on such foundations. These findings suggest that the “binders” principally care about the members of the in-group being harmed *regardless of their numbers*, which likely drives their support for disproportional retributive policies against the out-group. Those with high levels in individualizing foundations, on the other hand, seem to be carefully considering the numbers of fatalities on both sides and judging the morality of an action in relation to the loss of individual lives regardless of whether they are in-group or out-group.

In the broader context of the research on morality in the field of International Studies, the research of moral foundations and policy preferences arguably transcend the traditional dichotomy between “moral”, norm-driven, idealist foreign policy based on the logic of appropriateness, and “immoral”, interest-driven, realist foreign policy based on the logic of (expected) consequences (March and Olsen 1998). The support for “hawkish” foreign policies that result in the use of force indeed frequently clash with the liberal understanding of morality based on individualizing moral foundations. However, as Rathbun and Stein (2020, p. 810) recently noted: “Ethics are not limited to domain of other-regarding, cosmopolitan individuals or states, nor are they defined by a particular decision-making logic.” Hawkish attitudes are frequently driven by alternative moral concerns based on binding moral foundations that have developed with respect to the in-group social cohesion (cf. Graham, Haidt and Nosek 2009). As such, in this perspective, “hawks and hardliners have morals too, just a different set of moral values than the Enlightenment ones emphasized by liberal idealists” (Kertzer *et al.* 2014, p. 826). This broader understanding of morality has a potential to contribute to the long-standing IR debates between rationalist

and constructivist approaches, by demonstrating that much of the seemingly “cold”, rational behavior is, in fact, driven by powerful emotions rooted in a specific set of moral concerns.

A possible limitation of our study is that in the real world, a number of additional factors not investigated in the present study would likely affect the respective public attitudes. However, as it is common in experimental studies conducted in artificial settings (McDermott 2011), our aim is not to reliably predict real-life attitudes, but to explore the causal effects of the factors under investigation. Another possible caveat is that while our study provides original insights into the determinants of public attitudes, it certainly does not directly translate to our ability to predict the likelihood of the military use of nuclear and chemical weapons in world politics. Nevertheless, examining of individuals’ attitudes towards the use of nuclear and chemical weapons is critical to our understanding of the likely public support for the respective policies, which is, at least in the democratic states, one of the key factors that the decision-makers take into account in their deliberations concerning the use of military force (Fever and Gelpi 2004). Moreover, according to the social constructivist accounts of nuclear non-use, public opinion on nuclear weapons has, in fact, had a constraining effect on U.S. decision-makers with respect to the military employment of nuclear weapons, and has also been one of the key factors for the development of the non-use norm (Tannenwald 2007, 48; Farrell 2010, 822–23). Finally, research into public attitudes is necessary for cross-comparisons of public-elite perspectives that could provide us with an even deeper understanding of the non-use norms and the specific ways these norms operate in world politics.

Avenues for Further Research

In the remaining part of this paper, we propose some avenues for future research on public attitudes to the use of nuclear and chemical weapons. First, much of the existing non-use research is strongly biased towards American decision-makers (e.g., Tannenwald 2007; Bentley 2014; Sauer 2015) or the American public (Press, Sagan, and Valentino 2013; Sagan and Valentino 2017; Haworth, Sagan, and Valentino 2019;

Rathbun and Stein 2020). Future research should investigate and compare the perceptions of the nuclear “taboo” across different countries and regions, including both Western and non-Western cultures.

Second, the majority of the existing research on the non-use of nuclear weapons has primarily examined the perception of the norm among either among the political and military elite (Tannenwald 2007; Bentley 2017; Pauly 2018) *or* the general public (Press, Sagan, and Valentino 2013; Sagan and Valentino 2017; Haworth, Sagan, and Valentino 2019). There are, however, valid reasons to suspect that there are substantial differences in the public–elite positions – among other things, due to the different level of socialization with international norms in certain elite positions in the governmental or military organizations. As such, future research should explore the sources of and the differences between public and elite perceptions of the non-use norm.

Third, our findings suggest that the American public is more averse to the use of chemical weapons than nuclear weapons. While the norms against nuclear and chemical weapons differ in many important aspects, they also share some similar characteristics (cf. Price and Tannenwald 1996; Bentley 2012; Shamai 2015) and their comparative robustness and level of internalization should be subject to further inquiry. This seems particularly pertinent given the recent violations of the “chemical taboo” in the Syrian conflict (see Bentley 2016).

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