

# Fickle Prosociality: How Violence against LGBTQ+ People Motivates Prosocial Mass Attitudes toward LGBTQ+ Group Members

MARCEL F. ROMAN *Harvard University, United States*

JACK THOMPSON *University of Leeds, United Kingdom*

**W**e present a *Fickle Prosocial Violence Response Model* to explain how indirect exposure to civilian-perpetrated violence against marginalized minority groups motivates prosocial attitudes toward victimized groups. Although the mass public may not sympathize with marginalized groups, they may adopt prosocial attitudes toward marginalized groups subject to civilian-perpetrated violence if the violence is salient and perceptibly illegitimate. However, the adoption of prosocial attitudes may be fickle. We find evidence consistent with the model. Studies 1–3 show that high-profile violence against LGBTQ+ people increases support for LGBTQ+ rights and reduces negative attitudes toward LGBTQ+ group members. But, the adoption of prosocial attitudes is short-term. Study 4 shows that less salient violence against LGBTQ+ people may not engender prosocial attitudes at the outset. Our findings suggest that violent events must be sufficiently salient to initially motivate prosocial beliefs. Nevertheless, salient civilian-perpetrated violence against marginalized groups may not sustainably motivate prosocial beliefs toward targeted groups.


## INTRODUCTION

**S**ince the Stonewall Uprising, there have been numerous instances of anti-LGBTQ+ violence in the United States. Despite progress on LGBTQ+ rights (Flores 2014), anti-LGBTQ+ violence and hate crimes have increased,<sup>1</sup> while several states introduced a record number of anti-LGBT+ laws recently.<sup>2</sup> Perhaps the most prominent, recent, instance of anti-LGBTQ+ violence was the 2022 Club Q massacre, where a gunman killed five clubgoers at a Colorado Springs LGBTQ+ nightclub. These violent acts, while sympathy-inducing within media and among some political elites, may reflect durable heteronormative societal norms.<sup>3</sup> Therefore, an open question is whether *indirect* (i.e., media observation of violence) exposure to high-profile civilian-perpetrated violence against LGBTQ+ group members motivates introspection among the mass public, shifting attitudes prosocially toward LGBTQ+ people.

We synthesize several theoretical insights and present a *Fickle Prosocial Violence Response (FPVR)*

model to explain how violence against marginalized groups may elicit prosocial attitudes toward targeted groups. Although the mass public may not strongly empathize with marginalized minority groups (Cikara et al. 2014), violence against marginalized groups may elicit prosocial attitudes if the violence is salient, perceptibly illegitimate, and the media and/or elites respond sympathetically (Birkland 1998; Branscombe and Miron 2004; Harth, Kessler, and Leach 2008; Iyengar 1994; Vossen, Piotrowski, and Valkenburg 2017). However, prosocial attitude adoption may be short-term. Social group attitudes are typically entrenched, even in light of salient events (Kite, Trogans, and Schultz 2019; Sears 1993; Tuch and Weitzer 1997). Immediate adoption of prosocial beliefs after violence may be counterbalanced by countervailing information in a discriminatory society (Vuletic and Keith Payne 2019). Elite messaging and pressure to support targeted groups may dissipate after an event loses salience (Downs 1972), undercutting sustainable prosocial attitudinal shifts (Birkland and Lawrence 2009; Zaller 1992).

We find evidence supporting the *FPVR* model by using several surveys and an unexpected-event-during-survey-design (UESD). Studies 1–3 demonstrate the public adopts prosocial attitudes toward segments of the LGBTQ+ community and their political rights shortly after civilian violence against LGBTQ+ group members—that is, the Pulse massacre and Matthew Shepard’s murder. However, *these attitudinal shifts do not persist*. Study 4 demonstrates the Club Q massacre had no effect on anti-gay or anti-trans attitudes. Consistent with the model, we provide evidence that the null effects at the outset are due to the less salient nature of the Club Q massacre vis-à-vis the Pulse massacre and Shepard’s murder. We provide corroborating evidence by demonstrating that less salient

Corresponding author: Marcel F. Roman , Assistant Professor, Department of Government, Harvard University, United States, [mroman@fas.harvard.edu](mailto:mroman@fas.harvard.edu).

Jack Thompson , Postdoctoral Research Fellow, Business School, University of Leeds, United Kingdom, [J.Thompson@leeds.ac.uk](mailto:J.Thompson@leeds.ac.uk).

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<sup>1</sup> <https://www.hrc.org/press-releases/new-fbi-hate-crimes-report-shows-increases-in-anti-lgbtq-attacks>.

<sup>2</sup> <https://www.aclu.org/press-releases/over-120-bills-restricting-lgbtq-rights-introduced-nationwide-2023-so-far>.

<sup>3</sup> *Heteronormativity* is “privileging gender conformity, heterosexuality, and nuclear families over ‘deviant’ forms of gender expression, sexuality, and family” (Pollitt et al. 2021, 522).

violent incidents against LGBTQ+ people outside those in Studies 1–4 largely do not motivate prosocial mass attitudes.

Our theory and evidence make several contributions. First, the *FPVR* model helps explain *how* violence against marginalized groups motivates prosocial beliefs toward targeted groups among the mass public. Our findings are important in light of several salient instances of civilian violence against marginalized groups in the United States: Vincent Chin’s 1982 murder, a Chinese man killed on the basis of anti-Japanese resentment; James Byrd’s 1996 murder, a Texas Black man lynched by white supremacists; the 2015 Charleston Church massacre, where a white supremacist murdered nine Black churchgoers; the 2015 Stanford sexual assault case (*People v. Turner*), where a Stanford undergraduate man sexually assaulted a woman; the 2018 Pittsburgh Tree of Life synagogue shooting, where a man killed 11 Jews on the basis of the anti-semitic “white genocide” conspiracy theory; the 2019 El Paso massacre, where a white supremacist killed 23 people, mostly Latinos, to counteract a “Hispanic invasion”; the 2021 Atlanta spa shooting, where eight people, mostly Asian women, were killed; the 2022 Buffalo massacre, where a white supremacist killed 10 Black people because he felt non-whites were “replacing” whites; and the 2023 shooting of Hisham Awartani, Tahseen Aliahmad, and Kinnan Abdalhamid, three Palestinian young men who were shot by a white man while speaking Arabic and wearing keffiyehs. We show that these events may not serve as sustainable moments of reevaluation concerning the sociopolitical status of marginalized groups and may not motivate prosocial attitudes at the outset if they are insufficiently salient. Thus, our model and evidence may explain why these events have not led to societal adjustment of beliefs perpetuating social inequalities and intergroup hostility.

Second, our analysis extends prior research on violence against marginalized groups by examining a different perpetrator type (civilian) and group (LGBTQ+). Prior research on violence and prosocial attitudes in the United States typically focuses on state (i.e., police) violence against Black people. This research often identifies prosocial responses to violence but mixed evidence on effect sustainability (Chudy and Jefferson 2021; Reny and Newman 2021; Sigelman et al. 1997; Tuch and Weitzer 1997). Civilian-perpetrated violence against LGBTQ+ group members may have theoretically distinct but important consequences. Civilian-perpetrated (instead of state-perpetrated) violence may be less likely to initially and/or sustainably motivate prosocial attitudes. The mass public may attribute state violence to systemic yet reformable institutional problems, motivating policy preferences benefiting targeted groups (Oskooii 2016). Yet civilian violence may be rationalized as a problem inherent to a troubled individual as opposed to the public’s systemic aggregate queerphobia (Ott and Aoki 2002), undercutting, at worst, initial introspection over one’s own queerphobic beliefs post-violence, at best, sustained introspection in

a heteronormative society consistently encouraging queerphobia.<sup>4</sup> Moreover, unlike racialized state violence, the violence we examine are not associated with subsequent mass protest, which may sustain event salience and facilitate long-lasting attitudinal shifts (Reny and Newman 2021). Consistent with these theoretical perspectives (and the *FPVR* model), our evidence highlights similarities and contrasts in the prosocial consequences of different types of violence, paving the way for further work in assessing how contextual variation of violent events may differentially motivate mass attitudinal responses.

Third, our analysis contributes to the *Focusing Event* literature (Birkland 1998). Prior research shows salient events shift mass attitudes, but briefly because of eventual salience loss (Birkland and Lawrence 2009; Sigelman et al. 1997). Additionally, LGBTQ+ politics research demonstrates high-profile pro-LGBTQ+ court cases (Flores 2015), Pride parades (Ayoub, Page, and Whitt 2021), and celebrities coming out (Miller et al. 2020), can motivate prosocial attitudes toward LGBTQ+ people. But this research places little emphasis on effect sustainability, does not assess event salience variation at the outset, and does not focus on violence against LGBTQ+ people, which may *reflect*, instead of *undercut*, queerphobia. We provide new evidence consistent with *Focusing Event Theory* in an unexplored domain.

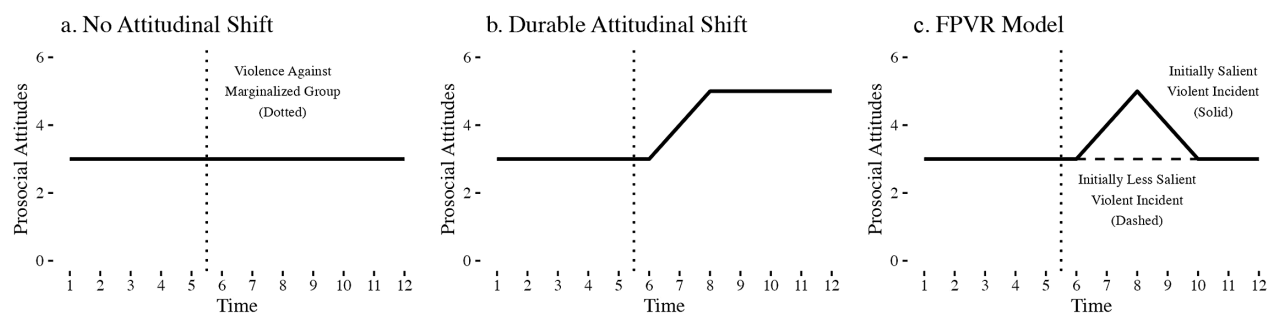
## VIOLENCE AND PROSOCIALITY

Preexisting theory and evidence demonstrates *direct* or *proximal* (i.e., via close social ties, like family, friends, and acquaintances) violence exposure during intergroup conflict may motivate parochialism, encourage intra- but not intergroup altruism, and undercut emotional substrates facilitating intergroup prosocial behaviors and attitudes, including, positive evaluations of out-groups and support for their political rights (Hadzic, Carlson, and Tavits 2020; Lupu and Peisakhin 2017; Mironova and Whitt 2018; Rusch 2014). Other evidence, building on *Post-Traumatic Growth* and *Altruism Born of Suffering Theory* (Staub and Vollhardt 2010), shows intergroup violence can motivate prosocial, altruistic attitudes and behaviors toward out-groups (Bakke, O’Loughlin, and Ward 2009). Direct or proximal violence exposure may motivate intergroup prosociality since victimization generates a basis for empathy (Sirin, Valentino, and Villalobos 2021).

Although prior work suggests direct or proximal exposure to intergroup, mostly interethnic, violence motivates prosociality, it is less clear how one-sided<sup>5</sup> *indirect* exposure to violence against LGBTQ+ people influences prosocial attitudes toward LGBTQ+ group members among dominant groups or the mass public. Hereafter, we define prosocial attitudes as positive

<sup>4</sup> “Queer” denotes a gender/sexual identity that does not correspond to heterosexual notions of sexuality and gender.

<sup>5</sup> “One-sided” refers to dominant group-perpetrated violence.

**FIGURE 1. Stylized Expectations Concerning the Effect of Violence against Marginalized Groups on Prosocial Attitudes**

Note: Horizontal lines denote prosocial attitudes toward marginalized groups (y-axis) over time (x-axis). The dotted line characterizes violence against a marginalized group.

feelings toward LGBTQ+ group members and policies facilitating their rights.

One expectation is that indirect exposure to one-sided violence may *not* motivate prosocial beliefs. Insufficient media coverage and attention to violent events may not produce agenda-setting effects mobilizing prosocial mass attitudes (Birkland 1998). Additionally, *Social Identity Theory* (SIT) implies dominant group members garner self-esteem from minority group marginalization (Tajfel and Turner 1982). Thus, the mass public may garner psychic benefits from indirectly observing violence against minority groups (Cikara et al. 2014). Consistent with *Intergroup Emotions Theory* (IET), these dynamics may be exacerbated by the absence of direct experiences with analogous violence facilitating empathy (Sirin, Valentino, and Villalobos 2021). Moreover, the social distance between modal mass public members and, for example, LGBTQ+ people may generate an empathy gap,<sup>6</sup> undercutting the adoption of prosocial attitudes after indirect violence exposure (Cikara et al. 2014). Finally, if the violence is civilian-perpetrated, the violent event may be framed by the media as a problem inherent to a troubled individual instead of societal antipathy toward LGBTQ+ people (Iyengar 1994; Ott and Aoki 2002; Zahzah 2019), which could undercut reflection concerning one's own antipathic beliefs among the mass public. Therefore, we may observe an empirical pattern consistent with Figure 1a, where indirect exposure to civilian violence against marginalized groups does not motivate mass prosocial attitudes toward targeted groups.

Another expectation is that, under some conditions, indirect exposure to violence against marginalized groups may motivate prosocial attitudes to ameliorate conditions concomitant with the violence. *Focusing Event Theory* implies salient violent incidents can mobilize mass attitudes (Birkland 1998). These attitudes may be more likely to be mobilized prosocially if the media and elites express the violence is

illegitimate and are sympathetic toward the targeted group (Iyengar 1994; Zaller 1992). Indeed, sympathetic messaging by partisan elites post-violence may help socially conservative co-partisans reconsider prejudicial attitudes (Harrison and Michelson 2017). The media also has a powerful influence on LGBTQ+ mass attitudes. Positive LGBTQ+ media portrayals and parasocial LGBTQ+ contact motivates prosocial attitudes toward LGBTQ+ people (Ayoub and Garretson 2017; Miller et al. 2020).

Likewise, alternative SIT and IET insights suggest if the mass public feels one-sided civilian violence against marginalized groups is illegitimate, it reflects poorly on their own stigmatizing beliefs, even if minority group marginalization otherwise facilitates self-esteem (Harth, Kessler, and Leach 2008). Dominant group or mass public members may emotionally regulate these psychic costs by reacting to violence against marginalized groups with sympathy and/or empathy (Branscombe and Miron 2004), motivating the downstream adoption of prosocial attitudes toward marginalized groups (Harth, Kessler, and Leach 2008; Stotzer 2009).

Some prior research implies prosocial attitude adoption toward marginalized groups after violence exposure may be durable. The mass public has become increasingly inclusive toward segments of the LGBTQ+ community over several decades (Flores 2014), suggesting the public may be durably receptive to sympathetic appeals after violence against LGBTQ+ group members. Indeed, Broockman and Kalla (2016) show a perspective-taking exercise can increase support for transgender antidiscrimination policies up to 3 months. Oskooii, Lajevardi, and Collingwood (2021) show high-profile institutionalized discrimination against religious minorities can reduce mass support for policies negatively affecting targeted groups up to a year. Reny and Newman (2021) show anti-Black police violence can motivate prosocial attitudes toward Black people up to at least 100 days. Therefore, we might observe an empirical pattern consistent with Figure 1b, where the public adopts increasingly prosocial attitudes after indirect exposure to civilian violence against marginalized groups, and these attitudinal shifts are durable.

<sup>6</sup> For the Pulse massacre, this gap may be amplified by the predominantly Latinx victims.

## THE FICKLE PROSOCIAL VIOLENCE RESPONSE MODEL

We develop and present an *FPVR* model, which posits perceptibly illegitimate salient civilian violence against marginalized groups can motivate prosocial attitudes toward targeted groups. But *these attitudinal shifts may be fickle* given reductions in event salience, the dispositional qualities of social group attitudes, and countervailing information in an otherwise discriminatory society.

*Issue-Attention Cycle Theory* posits that the public may react to dramatic events highlighting ignored social issues, like violence against LGBTQ+ group members, in an initially proactive manner. However, attitudinal shifts seeking to resolve a social ill may not be sustainable when it becomes clear resolving the problem is difficult (e.g., reevaluating queerphobic beliefs offering a privileged status) and the problem becomes less salient over time (Downs 1972). Prior research implies sympathetic media and elite messaging after violence must persist to generate sustainable prosocial responses (Zaller 1992). Without persistent sympathetic messaging, the masses may not be continually encouraged to adopt positive emotions toward targeted groups in addition to an understanding of the violence as illegitimate, producing a decay in prosocial attitudinal responses.

Moreover, prosocial attitudinal responses may be short-term impression management. Illegitimate violence rejected by society, media, and elites may motivate prosocial expressions toward the targeted group among the masses to save face (Harth, Kessler, and Leach 2008), but may not result in long-term attitudinal shifts motivated by the difficult task of dismantling hierarchical social relations (Nguyen et al. 2021). Short-term impression management may not be capable of undermining predispositions toward marginalized groups rooted in preadult socialization (Kite, Togans, and Schultz 2019; Sears 1993). Long-term attitudinal shifts may also be undercut by countervailing pressure to adhere to queerphobic norms in an otherwise heteronormative society (Vuletich and Keith Payne 2019).

Framing theory may also help explain the potential absence of long-term prosocial attitudinal shifts. Story framing affects how the public assigns responsibility to an event and preferred policy and societal responses. Media outlets may adopt episodic or thematic frames in their news coverage. Episodic frames emphasize event-centered information with attention toward an individual's actions (e.g., the violent perpetrator), whereas thematic frames emphasize broader problems (e.g., queerphobia) (Iyengar 1994). Ott and Aoki (2002) and Zahzah (2019) posit media frames of prominent instances of violence against LGBTQ+ people, such as Matthew Shepard's murder and the Pulse massacre, often emphasize the perpetrator's gratuitous violence instead of societal heteronormativity. These episodic frames may allow mass public members to simply express prosocial attitudes toward LGBTQ+ to absolve oneself of short-term guilt but lose sight of reflecting over their quotidian role facilitating a heteronormative

society in the long term (Ott and Aoki 2002), especially in light of countervailing information from a queerphobic society.<sup>7</sup>

In summary, an observable implication of the theoretical synthesis informing the *FPVR* model is that indirect exposure to *salient* and *sympathetic* messaging from media and elites after violence against LGBTQ+ group members may encourage the adoption of prosocial attitudes toward segments of the LGBTQ+ community. But, the adoption of prosocial attitudes toward LGBTQ+ group members may not be long-lasting. Therefore, we may observe an empirical pattern consistent with the solid line in Figure 1c. **H1:** Indirect exposure to civilian violence against LGBTQ+ group members will initially increase prosocial attitudes toward LGBTQ+ group members. **H2:** But indirect exposure to civilian violence against segments of the LGBTQ+ community will not produce sustainable increases in prosocial attitudes.

Prior evidence corroborates the *FPVR* model. Some evidence shows high-profile anti-Black police violence increased prosocial attitudes toward Black people, but these attitudes reverted to the pre-violence equilibrium shortly thereafter (Chudy and Jefferson 2021; Nguyen et al. 2021; Tuch and Weitzer 1997). Birkland and Lawrence (2009) demonstrate Columbine immediately increased gun control support, but only briefly.

### Individual-Level Heterogeneity

#### *Shared Marginalization*

*Group Empathy Theory* posits marginalized group members who possess similar discriminatory experiences support each other (Sirin, Valentino, and Villalobos 2021). Cross-group support may be more likely if the discrimination a particular group experiences is perceptibly shared (Cortland et al. 2017). Members of other subjugated groups (e.g., women) may perceive similarities between their experiences and those of LGBTQ+ group members, especially with regard to targeted violence. Indeed, we have argued in the Introduction that women and non-whites have been historically subject to targeted violence in a conceivably similar manner as LGBTQ+ people. Thus, group members discriminated against on other dimensions, like race and/or gender, may be more inclined to respond prosocially toward LGBTQ+ group members after exposure to violence against segments of the LGBTQ+ community.

#### *Political Liberalism*

Relative to conservatives and moderates, liberals are less socially conservative concerning sexuality and gender and are more accepting of marginalized social groups. Indeed, liberals are more favorable toward

<sup>7</sup> Moreover, if the violence is a mass shooting, conservative outlets, like *Fox News*, may emphasize gun rights, reducing sustained discussion of violence against LGBTQ+ group members that may motivate long-term prosocial belief adoption (Cassino 2016).

segments of the LGBTQ+ community and pro-LGBTQ+ policies (Flores 2014). Conservatives are more likely to adopt anti-LGBTQ+ beliefs in response to threatening anti-LGBTQ+ elite rhetoric, while liberals are resistant to such rhetoric (Górska and Tausch 2022). Relative to moderates and conservatives, liberals are also more inclined to respond prosocially toward marginalized groups in response to high-profile state violence against said groups (Reny and Newman 2021). Therefore, liberals may be more likely than conservatives to adopt prosocial attitudes toward LGBTQ+ group members in response to violence against LGBTQ+ people.

### Geographic Context

Individuals living in areas with a higher concentration of LGBTQ+ people may be more likely to come into contact with LGBTQ+ group members and to therefore develop strong social ties with LGBTQ+ people (Tadlock et al. 2017). Harrison and Michelson (2019) identify consistent evidence that contact with LGBTQ+ group members motivates prosociality toward different segments of the LGBTQ+ community. Given that individuals living in areas with more LGBTQ+ people may be dispositionally favorable toward the LGBTQ+ community (Thompson 2022), they may also be more inclined to adopt prosocial attitudes toward segments of the LGBTQ+ community after high-profile civilian violence against LGBTQ+ group members. Indeed, prior research shows that individuals living in LGBTQ+ geographic contexts resist anti-LGBTQ+ elite rhetoric (Górska and Tausch 2022).

In summary, **H3a–c**: indirect exposure to civilian violence against LGBTQ+ group members will be more likely to motivate prosocial attitudes toward LGBTQ+ group members among: **(a)** non-whites and women relative to whites and men; **(b)** liberals relative to moderates and conservatives; and **(c)** individuals living in geographic contexts with more LGBTQ+ people relative to those living in contexts with less LGBTQ+ people.

### Event-Level Salience Heterogeneity

The *FPVR* model implies violent events must be sufficiently *salient* (i.e., covered by media and paid attention to by the public) to generate attitudinal shifts toward targeted groups (Birkland 1998; Downs 1972; Zaller 1992). Indeed, prior studies demonstrating mass attitudinal shifts after U.S. violent events are analyzing high-profile events (Birkland and Lawrence 2009; Reny and Newman 2021; Sigelman et al. 1997; Tuch and Weitzer 1997). Moreover, prior research informing the *FPVR* model's assumptions suggests attitudinal shifts decay with reduced salience (Birkland and Lawrence 2009; Chudy and Jefferson 2021; Nguyen et al. 2021; Tuch and Weitzer 1997). Importantly, salience is *not binary*. Violent Event A may be more salient than Violent Event B, but less salient than Violent Event C, such that Event A does not influence mass attitudes like Event C does. Thus,

we may expect to observe an empirical pattern consistent with the dashed line in Figure 1c. **H4**: Initially more salient instances of civilian violence against LGBTQ+ group members will be more likely to motivate prosocial attitudes toward LGBTQ+ people than initially less salient instances of civilian violence against LGBTQ+ group members.

### EVENT 1: THE PULSE MASSACRE

Studies 1 and 2 evaluate the consequences of the Pulse massacre. The massacre occurred on June 12, 2016 at the Pulse LGBTQ+ nightclub in Orlando, Florida. The massacre was perpetrated by Omar Mateen, an ISIS allegiant. Mateen killed 49 and injured 53 clubgoers with a semiautomatic rifle.<sup>8</sup> After taking hostages, Mateen was killed by the police. During the massacre, Pulse was hosting “Latin Night.” Eighty percent of victims were Latinx.<sup>9</sup>

The nation reacted sympathetically post-massacre. Republican Florida Governor Rick Scott expressed support for those affected while instituting a state of emergency. The Obama administration expressed condolences and ordered federal assistance to the police investigation and the community. In a press conference, Obama described the massacre as an “act of hate.” Many on social media, including 2016 presidential election candidates, congresspeople, political figures, foreign leaders, and celebrities, expressed condolences.

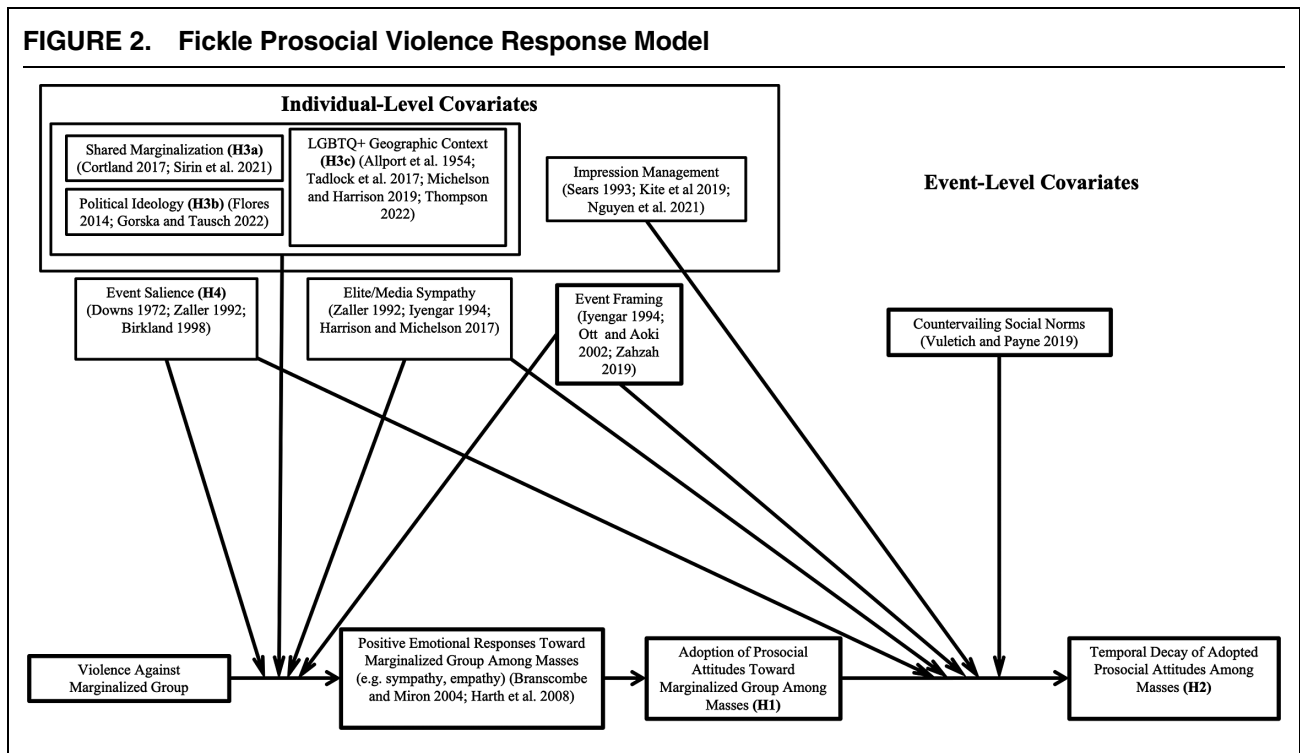
The massacre was salient. 90% of adults indicated they were closely following the incident immediately post-massacre (Supplementary Figure A1). A survey that was conducted during the massacre (June 10–26) suggests that the public was aware of the shooting since it expressed more concerns about terrorism and gun violence post-massacre (Supplementary Figure A4).

Media coverage of topics related to Pulse, LGBTQ issues, and terrorism discontinuously increased post-massacre (Supplementary Figure A2). Google searches related to Pulse, LGBTQ issues, and terrorism peak when the massacre occurs (Supplementary Figure A3). Media coverage and Google searches related to these topics were either declining or limited pre-massacre, suggesting that anticipatory effects do not drive attitudinal shifts toward LGBTQ+ issues or people post-massacre. However, coverage and searches decline to their pre-incident levels by July, implying fleeting salience.

The massacre was not simply interpreted as a terror attack, but as an instance of targeted, illegitimate, anti-

<sup>8</sup> <https://www.cnn.com/2016/06/12/us/orlando-shooter-omar-mateen/index.html>.

<sup>9</sup> Victims spanned the LGBTQ+ spectrum, but gay men may have been centered in the media post-massacre (Ramirez, Gonzalez, and Galupo 2018). Although this might mean that the massacre was not interpreted as violence against a broader LGBTQ+ community, this is not a shortcoming with our analysis, but with how society interprets the massacre.



LGBTQ+ violence.<sup>10</sup> Between 70% and 85% of adults believed that the shooting was a hate crime (Supplementary Figure A5).<sup>11</sup> Therefore, consistent with the *FPVR* model, the mass public may respond prosocially to the perceptibly illegitimate Pulse massacre, given the event’s salience and concomitant sympathetic response from both the media and elites. But, given reduced media coverage and attention to the event over time, attitudinal responses may be short-lived.

### Study 1: TAPS

#### Data and Design

Study 1 uses The American Panel Survey (TAPS, Wave 55) to assess whether exposure to violence against LGBTQ+ people motivates support for policies benefiting segments of the LGBTQ+ community. TAPS is a monthly online survey administered by the Weidenbaum Center, with national probability sampling conducted by GfK/Knowledge Networks (Weidenbaum Center 2016).

<sup>10</sup> Omar Mateen was not explicitly motivated by anti-LGBTQ attitudes (see <https://www.nbcnews.com/feature/nbc-out/what-really-happened-night-pulse-n882571>). However, the mass public perceived the massacre as an anti-LGBTQ+ hate crime regardless of Mateen’s motive (Supplementary Figure A5).

<sup>11</sup> See Online Dataverse Supplementary Material (DSM) Sections 1.2 and 1.6 for details on the data of Supplementary Figure A5 (Roman and Thompson 2024).

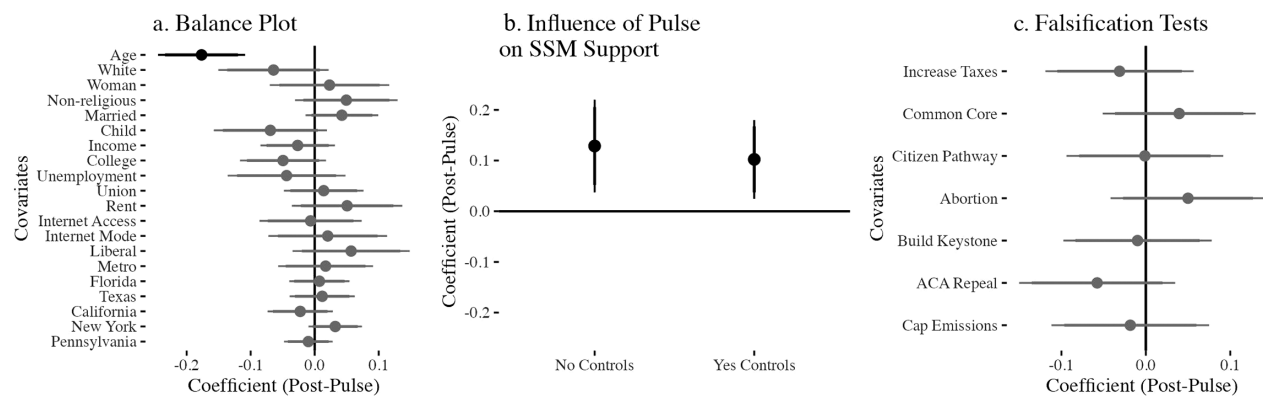
The outcome of interest is same-sex marriage support (*SSM support*). *SSM* is an important LGBTQ+ rights dimension, and it implicates multiple segments of the LGBTQ+ community. Gay, lesbian, and bisexual people who want to marry a same-sex partner benefit from legalized *SSM*. Transgender people who have not changed their “legal” gender but seek to marry their partner in heterosexual romantic relationships would also benefit from legalized *SSM*.<sup>12</sup> *SSM* approval is near-unanimous among LGBTQ+ people. Sixty percent of LGBTQ+ people say *SSM* should be a priority even if it takes attention from other issues.<sup>13</sup> TAPS asks respondents if they “generally support or oppose same-sex marriage,” with an option to indicate “no opinion.”<sup>14</sup> We measure *SSM support* as an indicator equal to 1 if the respondent indicates they support *SSM*, and 0 otherwise.

The independent variable is being interviewed after the Pulse massacre (*post-Pulse*). TAPS was fielded between June 8 and July 8, 2016. The Pulse massacre occurred on June 12, 2016, so we implement a UESD with TAPS comparing *SSM support* for respondents interviewed pre- and post-Pulse (Muñoz, Falcó-Gimeno, and Hernández 2020). *Post-Pulse* is a binary indicator equal to 1 if a respondent is interviewed after June 12, 2016. Since we cannot be certain that

<sup>12</sup> <https://transequality.org/resources/marriage-equality-and-transgender-people>.

<sup>13</sup> <https://www.pewresearch.org/social-trends/2013/06/13/a-survey-of-lgbt-americans/>.

<sup>14</sup> See DSM Section 2.1 for outcome measurement details.

**FIGURE 3. SSM Support Increases Post-Pulse**

Note: Panel (a) displays respondent covariate balance pre- and *post-Pulse*. Panel (b) characterizes the *post-Pulse* effect on SSM support with and without covariate adjustment. Panel (c) displays falsification tests characterizing the unadjusted *post-Pulse* effect on LGBTQ+-irrelevant outcomes. Black coefficients are statistically significant, and gray otherwise. Estimates use population weights. All covariates scaled between 0 and 1. 95% percent CIs displayed from HC2 robust SEs. See DSM Tables 91–93 for regression tables characterizing the coefficients.

respondents were aware of the massacre, the *post-Pulse* coefficient is an “intent-to-treat” (ITT) effect. However, Supplementary Figures A1–A4 suggest the public was attentive to the massacre. Moreover, TAPS respondents are more likely to believe ISIS is an important issue *post-Pulse* (Supplementary Figure B6), suggesting they “received the treatment” since news reports indicated that the massacre’s perpetrator had pledged fealty to ISIS. If **H1** is supported, the *post-Pulse* coefficient would be *positive*.

In the absence of internal attention checks, we truncate our sample to those who completed the survey in a “reasonable duration” to account for online survey respondent inattentiveness, which may produce low-quality responses attenuating associations of interest. See DSM Section 2.4.1 for more details and evidence that this truncation does not affect our results or TAPS’ representativeness. After truncation, TAPS contains  $N = 1,142$  respondents, 662 (58%) interviewed before Pulse and 480 after (42%).

We demonstrate that the *post-Pulse* coefficient is insulated from bias by validating UESD identification assumptions. The first assumption is ignorability. “Treatment” should be independent of potential outcomes conditional on random sampling. Thus, respondents interviewed pre- and *post-Pulse* should be compositionally similar. Figure 3a supports that assumption. Respondents interviewed *post-Pulse* are compositionally similar to respondents interviewed pre-Pulse across 20 baseline covariates except age (see DSM Section 2.2 for baseline covariate measurement), a finding consistent with multiple testing.

Excludability is another UESD identification assumption: differences between respondents interviewed pre- and *post-Pulse* should be the sole consequence of the massacre. The “treatment” is not just the massacre but collateral media attention. However, other than the massacre, there are no punctuated moments of media attention to LGBTQ+ issues or

violence against LGBTQ+ people during the month TAPS was fielded (June, Supplementary Figures A2 and A3), suggesting the absence of simultaneous events motivating pro-LGBTQ+ attitudes.

Additionally, it is unlikely that preexisting SSM support time trends are driving the result. To make sure, we subset TAPS to the pre-Pulse period and assess the placebo “effect” of being interviewed after the median pretreatment date and find null results (DSM Table 89).

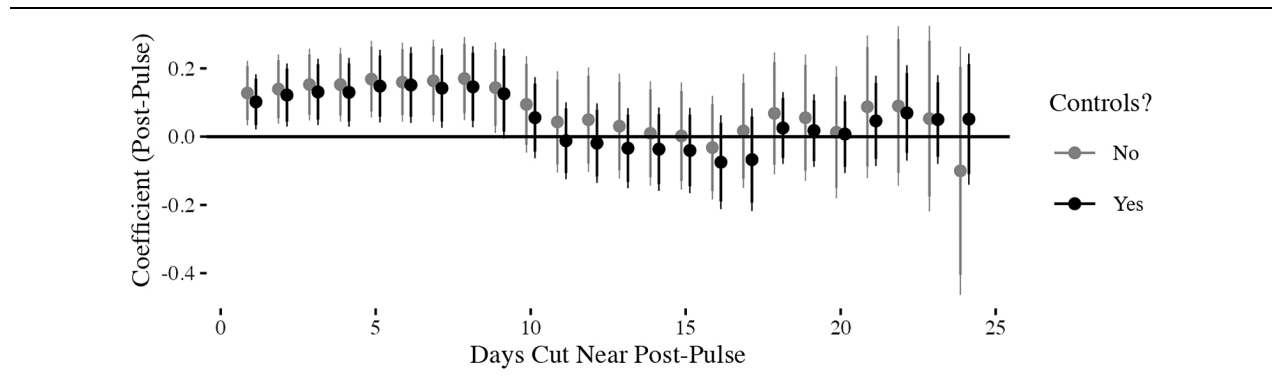
### Results

Consistent with **H1**, respondents interviewed *post-Pulse* are 13 and 10 percentage points more likely to support SSM without and with covariate adjustment ( $p < 0.05$ ; Figure 3b). These coefficients are 20%–26% of the outcome standard deviation.

We assess the robustness of our results. Our findings are likely not driven by secular dynamics outside the massacre. Falsification tests on treatment-irrelevant outcomes such as support for increasing taxes, common core, a citizenship pathway, abortion, the Keystone pipeline, ACA repeal, and emission caps are null (Figure 3c). These tests suggest chance age imbalance does not implicate balance on policy preferences.<sup>15</sup> Given the close association between socially conservative religious beliefs like abortion restrictionism and SSM opposition (Uecker and Froese 2019), the null effect of *post-Pulse* on abortion support in Figure 3c suggests that our results are not driven by secular shifts in social conservatism or religiosity.<sup>16</sup> The results are not driven by outcome item non-response since non-

<sup>15</sup> Age imbalance may not induce bias. Age is unrelated to SSM support in TAPS, so it does not explain joint treatment and outcome variation (DSM Table 92).

<sup>16</sup> SSM and abortion support are only moderately correlated ( $\rho = 0.52$ ), suggesting SSM support is explained by other factors, like the Pulse massacre, independent of dispositional religiosity or social

**FIGURE 4. The Influence of Pulse on SSM Support Attenuates over Time**

Note: The x-axis is days cut from moment of Pulse massacre after the massacre (with days after intact). The y-axis is the *post-Pulse* coefficient. 95% CIs from robust SEs. See DSM Table 94 for regression table characterizing reported coefficients in this figure. See DSM Section 2.10.5 for control covariate coefficients.

response is balanced pre- and post-Pulse (DSM Table 88). The results are not driven by seasonal trends; Pulse's influence is unique to 2016. Three surveys fielded in June 2012, 2013, and 2017 show the influence of being interviewed after the massacre's calendar day on *SSM support* is null (Supplementary Figure B7), suggesting no secular dynamics intrinsic to the month of June that could explain our findings (e.g., Pride Month). Our findings are robust to smaller bandwidths less susceptible to secular temporal trends (Supplementary Figure B8). Finally, given that we are deriving ITT coefficients, we test if *post-Pulse* is heterogeneous by political interest or news consumption. We do not find heterogeneity (Supplementary Section B.5). This is not concerning since 90% of the public was following the shooting (Supplementary Figure A1), suggesting high treatment reception regardless of dispositional political or media interest.

#### Temporal Persistence

We test **H2** by assessing if the influence of Pulse on *SSM support* is temporally durable. We remove observations in the days immediately *post-Pulse* but not after those days, and re-analyze the influence of being surveyed *post-Pulse*. The logic is that respondents interviewed immediately *post-Pulse* may be the most susceptible to shifting attitudes toward segments of the LGBTQ+ community. Removing them may help us evaluate attitudinal decay by comparing respondents interviewed just before and some days after Pulse. After removing respondents interviewed between 1 and 10 days *post-Pulse*, the influence of being interviewed *post-Pulse* on *SSM support* is null (Figure 4).<sup>17</sup> Therefore, temporal attenuation is quick relative to

conservatism. Religiosity is constant pre- and *post-Pulse* (Figure 3a), further suggesting religiosity does not drive our results.

prior studies demonstrating attitudinal shifts lasting several months to a year (Broockman and Kalla 2016; Oskooii, Lajevardi, and Collingwood 2021). Consistent with **H2**, the initial *SSM support* increase *post-Pulse* was not durable.

#### Individual-Level Heterogeneity

We test **H3a–c** by assessing if the *post-Pulse* coefficient is larger among: (a) non-whites relative to whites and women relative to men, (b) liberals relative to moderates and conservatives, and (c) individuals living in states with a higher proportion of LGBT-identifying people and counties with a higher density of same-sex couples relative to individuals who live in areas with less LGBT-identifying people and same-sex couples.<sup>18</sup> Inconsistent with **H3a–c**, *post-Pulse* does not appear heterogeneous by marginalized group membership, liberalism, and LGBTQ+ geographic context (Supplementary Table B1). These findings suggest the massacre had a largely homogeneous initial influence on mass attitudes.

## Study 2: PI S-IAT Data

#### Data and Design

Study 2 examines whether the public adopts positive attitudes toward segments of the LGBTQ+ community

<sup>17</sup> One-twentieth covariates are imbalanced after cutting 1, 2, 6, 14, 16, 21, and 22 days *post-Pulse* (DSM Table 65), suggesting that the results of Figure 4 are not driven by imbalance.

<sup>18</sup> We use 2016 Gallup data to identify the proportion of each state's population identifying as "lesbian, gay, bisexual, or transgender" (see <https://news.gallup.com/poll/201731/lgbt-identification-rises.aspx>). We use 2010 Census data to identify same-sex couple density (the number of same-sex couple households per one thousand households in a county, see <https://williamsinstitute.law.ucla.edu/visualization/lgbt-stats/>). We merge these state- and county-level covariates to the TAPS data by using respondent zip code information.



*post-Pulse*. We use Project Implicit (PI) data on U.S. respondents self-selecting into and completing an internet survey in 2016 asking questions on their explicit and implicit attitudes toward gay people via PI's Sexuality Implicit Association Test (S-IAT,  $N = 43,950$ ) (Xu et al. 2016).<sup>19</sup> On average, 175 U.S. respondents completed the PI S-IAT survey daily during 2016.<sup>20</sup> For information on S-IAT sample composition and representativeness, see DSM Section 3.1.

The outcomes are the S-IAT *D-score*, *straight bias*, and *heterocentrism*. The S-IAT calculates normalized averages of how quickly respondents associate negative/positive attributes to gay/straight people relative to negative/positive attributes to straight/gay people in the form of a *D-score*. The *D-score* ranges from  $-2$  to  $2$ . Higher values suggest implicit bias against gay people (i.e., associating negative attributes to gay people) (Greenwald and Lai 2020).<sup>21</sup>

Given indirect measurement, the *D-score* may be less influenced by impression management to be perceived as pro-gay post-massacre (Greenwald and Lai 2020). Therefore, we can assess relatively quick, negative, emotional responses (i.e., System 2 responses) to gay people in addition to more deliberate evaluations of gay people (i.e., System 1 responses) (Greenwald and Lai 2020). Although the IAT is not insulated from introspection, the modest correlation between the *D-score* and explicit bias suggests the IAT measures attitudes that are difficult to manipulate. Therefore, the *D-score* is valuable since we can demonstrate even temporary prosocial attitudinal shifts may not be impression management. The *D-score* is well established and associated with objective covariates characterizing subordination (Ratliff and Smith *Forthcoming*).

*Heterocentrism* and *straight bias* are explicit anti-gay bias measures. *Heterocentrism* is the difference between respondents' ratings on 10-point feeling thermometers for straight men and gay men. *Straight bias* is a 7-point measure from "I strongly prefer gay to straight people" to "I strongly prefer straight to gay people." The *D-score*, *straight bias*, and *heterocentrism* are rescaled between 0 and 1.

Although *heterocentrism* is explicitly about gay men, and *straight bias* is implicitly about gay men, the *D-score* captures attitudes toward gay men and lesbians. In effect, the *D-score* measures implicit beliefs toward gay men, lesbians, and bisexuals (and transgender people in same-gender relationships). Moreover, even if our Study 2 outcomes are limited when it comes to measuring attitudes toward some members of the broader LGBTQ+ community (e.g., transgender people), attitudes toward gay people are correlated with attitudes toward transgender people (Norton and Herek 2013), which may be pronounced given the

massacre affected transgender people.<sup>22</sup> Therefore, our Study 2 outcomes implicate large segments of the LGBTQ+ community. Given the outcomes characterize negative attitudes, if **H1** is supported, *post-Pulse* should be *negative*.

We use a UESD with the S-IAT to evaluate how anti-gay attitudes shifted *post-Pulse*. Given the large number of individuals taking the S-IAT daily, we estimate the influence of taking the S-IAT *post-Pulse* using respondents taking the S-IAT 5–50 days pre- and post-massacre in addition to the full 2016 sample between January and September. We validate the UESD ignorability identification assumption. Unlike Study 1, respondents are not sampled, but self-select, into the S-IAT. Therefore, sample composition may shift due to external events or secular trends. We expect respondents surveyed shortly pre- and post-massacre will be compositionally similar. However, respondents may be increasingly dissimilar in samples including respondents taking the survey well before or after the massacre. Supplementary Figure C10 verifies our expectation. For 5–20-day bandwidth samples (Panels A–D), there is statistical imbalance on respondent characteristics pre- and post-Pulse on 1–2/12 baseline covariates. For 25–50-day bandwidth samples, there is imbalance on 3–7 covariates (Panels E–J). Given the 15- and 20-day bandwidth samples are only imbalanced on race, we prioritize interpreting the influence of *post-Pulse* on anti-gay attitudes using these samples. These findings suggest our coefficient estimates, particularly for the 15- and 20-day bandwidth samples, are relatively insulated from omitted variable bias.<sup>23</sup>

## Results

Figure 5 displays *post-Pulse* ITT coefficients where the outcome is the *D-score*, *straight bias*, and *heterocentrism*. In the 15- and 20-day sample bandwidth estimates, respondents surveyed *post-Pulse* have a lower *D-score* ( $-0.01$ ,  $p < 0.10$ ) and *heterocentrism* ( $-0.01$ ,  $p < 0.01$ ), equivalent to 7% and 8% of the respective outcome standard deviations pre-Pulse. Although small, these coefficients are reasonable, likely underestimated, and substantively important vis-à-vis the target population (see DSM Section 3.4).

The massacre does not appear to statistically reduce *straight bias* except in sample bandwidths with higher covariate imbalance (e.g., 25–50 days). Given that *straight bias* is highly explicit, the absence of a reliable shift in *straight bias post-Pulse* may be a function of impression management on part of respondents disposed against LGBTQ+ whose attitudes may otherwise shift in favor of LGBTQ+ through indirect bias measurement (Greenwald, McGhee, and Schwartz 1998). In sum, we find additional support for **H1** in Study 2.

<sup>19</sup> Data available here: <https://osf.io/yjqmw/>. See <https://implicit.harvard.edu/implicit/education.html> for PI information.

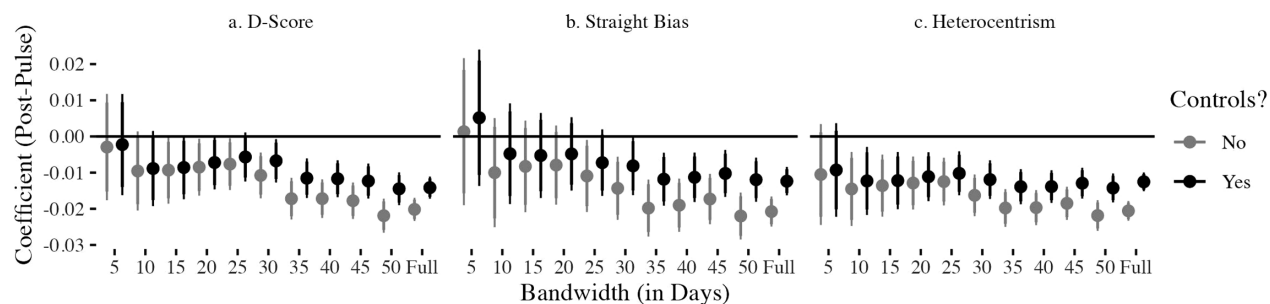
<sup>20</sup> We exclude respondents interviewed after September 8, 2016 due to order effects since the S-IAT measurement changes from 200 to 188 trials by cutting a task block at that moment.

<sup>21</sup> See DSM Section 3.3 for more *D-score* measurement details.

<sup>22</sup> <https://www.advocate.com/crime/2016/6/17/pulse-survivor-stop-being-shady-and-messy-just-love-one-another-video>.

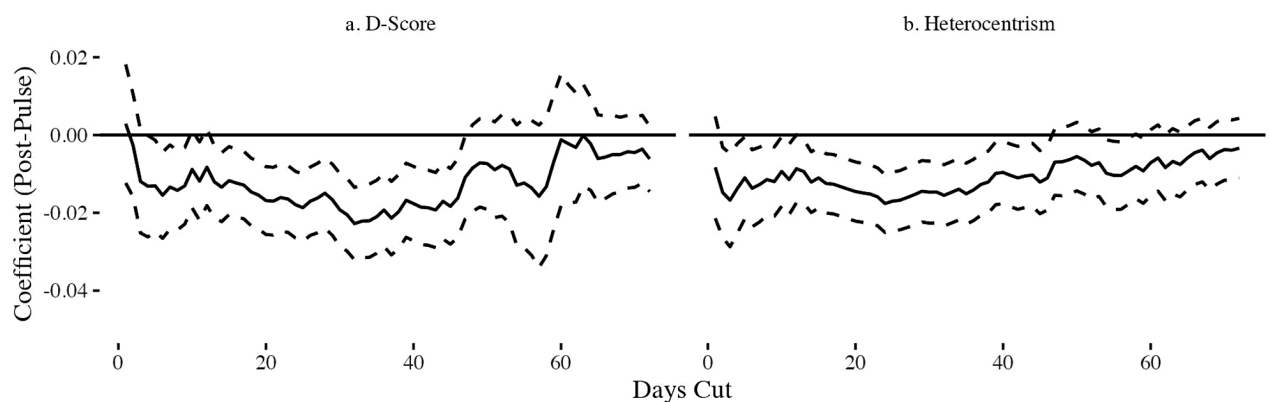
<sup>23</sup> Importantly, like Study 1, religiosity is constant pre- and *post-Pulse*, suggesting that socially conservative trends are not driving our results.

**FIGURE 5. Influence of *post-Pulse* on Anti-Gay Attitudes**



Note: The x-axis is the sample bandwidth. The y-axis is the *post-Pulse* coefficient. All covariates rescaled between 0 and 1. 95% CIs displayed from robust SEs. See DSM Sections 3.5.2 and 3.5.3 for corresponding regression tables.

**FIGURE 6. The Influence of *Post-Pulse* on Reducing Anti-Gay Attitudes Attenuates over Time**



Note: The x-axis is days cut from moment of Pulse massacre after the massacre (with 15 days after kept intact). The y-axis is the *post-Pulse* coefficient. All estimates from models adjusting for controls. 95% CIs from robust SEs. See DSM Tables 123–130 for tables characterizing the displayed coefficients. See DSM Sections 3.5.8 and 3.5.9 for control coefficients.

We conduct several robustness checks. Preexisting time trends are not driving our results (Supplementary Section C.3). We rule out if systematic temporal trends near June motivate prosocial attitudes toward gay people other than the massacre (Supplementary Section C.4). We rule out if our findings are due to a secular attitudinal trend in favor of marginalized groups (Supplementary Section C.5). We also rule out if respondent self-selection generates sorting bias (Supplementary Section C.7).

*Temporal Persistence*

We assess whether the *D-score* and *heterocentrism* decrease is sustainable. Consistent with **H2**, descriptive statistics suggest that anti-gay attitudes decreased *post-Pulse*, but that they rebounded to pre-Pulse levels around August (Supplementary Figure C9). We conduct a formal test of the sustainability of attitudinal shifts *post-Pulse* and compare S-IAT respondents surveyed 15 days pre-Pulse to those surveyed 15 days after

1–72 days *post-Pulse* (leaving at least 15 days up to the end of the posttreatment sample in the 2016 S-IAT data). This exercise allows us to compare individuals surveyed prior to Pulse to those surveyed some time away from Pulse at multiple time intervals. Respondents in time intervals that cut more days *post-Pulse* are temporally further from the massacre and potentially more subject to attitudinal decay in pro-gay beliefs. Figure 6 demonstrates the *D-score* and *heterocentrism* decrease was sustained up to 50 days *post-Pulse*. However, after roughly 50 days, *post-Pulse* attenuates toward 0.<sup>24</sup> Although attitudinal shifts last 50 days, these shifts are still much shorter than prior studies demonstrating long-term attitudinal shifts toward marginalized groups after external stimuli (Broockman and

<sup>24</sup> After cutting 50 days *post-Pulse*, there is covariate imbalance, but this does not invalidate Figure 6. After covariate adjustment, the *post-Pulse* coefficients attenuate toward zero, suggesting that temporal attenuation occurred *earlier* than our results suggest (DSM Section 3.6).

Kalla 2016; Oskooii, Lajevardi, and Collingwood 2021). Consistent with **H2**, Study 2 suggests that the massacre motivated prosocial beliefs, but not durably.

### Individual-Level Heterogeneity

We test **H3a–c** by assessing if the *post-Pulse* coefficient is larger among non-whites, women, liberals, and individuals living in geographic contexts with more LGBTQ+ people.<sup>25</sup> Inconsistent with **H3a–c**, we find that the massacre's influence is homogeneous. *Post-pulse* is not stronger for non-whites, women, liberals, or respondents in geographic contexts with more LGBTQ+ people (Supplementary Tables C4 and C5).

### Mitigating Bundled Treatment Concerns

Our argument is that respondents adopted prosocial beliefs toward segments of the LGBTQ+ community after the Pulse massacre because the massacre was an instance of perceptibly anti-LGBTQ+ violence. However, the Pulse massacre was a bundled treatment in that it was also a terror attack and attack against predominantly Latinx victims. Therefore, the results in Studies 1 and 2 may be driven by the fact the Pulse massacre was a terror attack and violence against Latinxs, not just violence against LGBTQ+ people. We mitigate these concerns with several tests and evidence outlined in detail in DSM Section 1.8.

Our tests do not entirely mitigate the bundled treatment problem. Our results may be due to the *combination* of circumstances associated with Pulse. Therefore, we conceptually replicate Studies 1 and 2 by assessing the influence of instances of violence against LGBTQ+ group member(s) in Studies 3 and 4 that were not terror attacks nor attacks against non-whites.

## EVENT 2: MATTHEW SHEPARD'S MURDER

Readers may be concerned about the external validity of Studies 1 and 2. The Pulse massacre is a unique instance of violence against LGBTQ+ people. It is the deadliest instance of violence against LGBTQ+ people, is the second deadliest mass shooting, has predominantly Latinx victims, was ISIS-inspired terrorism, and occurred after seminal gay rights victories (e.g., same-sex marriage). Therefore, it may be prudent to assess if a distinct instance of violence against LGBTQ+ group member(s) also motivates prosocial beliefs. Consequently, we examine how the murder of Matthew Shepard, a white gay Wyoming college student, by two presumptively heterosexual white men, influenced beliefs toward homosexuality during a more homophobic temporal context.

<sup>25</sup> Geographic context is measured like Study 1. We use respondent county data in the S-IAT to merge in information on LGBTQ+ geographic context.

On October 6, 1998, Shepard was brutally beaten by Aaron McKinney and Russell Henderson. The incident was heavily covered by national media (Loffreda 2001). Shepard died 6 days later on October 12. The murder was salient and the nation reacted sympathetically. A bipartisan group of congresspeople condemned the murder and expressed condolences. A vigil was held outside the U.S. Capitol on October 15, where thousands of people, including current and former congresspeople and celebrities, paid respects to Shepard. Advocates note Shepard's murder engendered a "seismic shift in attitudes towards the LGBTQ community."<sup>26</sup> Indeed, a decade later, Congress passed the Matthew Shepard and James Byrd Hate Crimes Prevention Act, which expanded the power to prosecute sexuality hate crimes.

On the month of Shepard's murder, the number of gay-related news articles was 150% (NYT) and 172% (WashPo) of the January–September 1998 average (Figure 7).<sup>27</sup> Consistent with the *FPVR* model, media attention to Shepard's murder was immediately intense but quickly declined, suggesting that attitudinal responses may be short-lived.

## Study 3

### Data and Design

To evaluate whether Shepard's murder decreased anti-gay attitudes, we identified surveys with similar items characterizing attitudes toward gay people shortly before and after Shepard's murder.<sup>28</sup> We identify two representative CNN telephone polls asking respondents if they believe homosexuality is "morally wrong" (*moral wrong*) 4 months before and 2 days after Shepard's death (CNN June 1998,  $N = 1,016$ ; CNN October 1998,  $N = 1,036$ ) (Gallup 1998; Yankelovich Partners 1998).<sup>29</sup> We stack these datasets and identify overlapping controls from each survey.<sup>30</sup> We then compare respondents interviewed after Shepard's murder (*post-Shepard*) to those interviewed before the incident to assess if anti-gay violence exposure decreased the belief homosexuality is morally wrong, consistent with **H1**. We focus on surveys with the *moral wrong* outcome for three reasons. First, the question is asked on three surveys after Shepard's murder (in 1998, 2001, and 2004), allowing an assessment of long-term attitudinal shifts. Second, there are multiple pre-Shepard surveys with the same item, allowing placebo tests to rule out if *post-Shepard* effects are due to secular progressive attitudinal trends concerning homosexuality's morality.

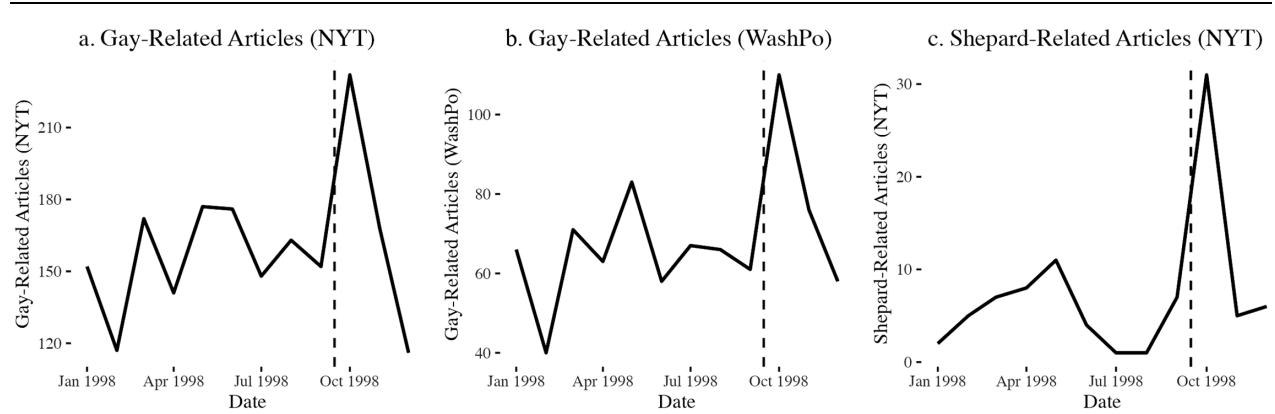
<sup>26</sup> <https://www.nbcnews.com/feature/nbc-out/two-decades-after-matthew-shepard-s-death-lgbtq-community-still-n919401>.

<sup>27</sup> See DSM Section 4.1 for details on media data.

<sup>28</sup> We use the search terms "homosexuality" or "homosexual" or "gay" in Roper iPoll between 1996 and 2000 to identify gay-related items around Shepard's murder.

<sup>29</sup> We found two other items that could serve as potential candidates for assessing the influence of Shepard's murder on LGBTQ+ attitudes. We do not use them for various reasons that we outline in DSM Section 4.8.

<sup>30</sup> See DSM Section 4.2 for more sampling methodology details.

**FIGURE 7. Media Coverage of Gay-Related Content in 1998**

Note: Panels (a,b) display the number of NYT/Washington Post gay-related articles (*y*-axis) by month (*x*-axis). Panel (c) displays the number of gay-related articles related to Shepard or anti-gay violence by month. Dashed vertical line denotes the period Shepard is murdered.

Third, *moral wrong* implicates large segments of the LGBTQ+ community. Lesbian, gay, bisexual, and transgender people may all partake in “homosexual” behavior. Given that the outcome characterizes a negative attitude toward segments of the LGBTQ+ community, the *post-Shepard* coefficient would be *negative* if **H1** is supported.

Our approach has shortcomings we assuage. First, given the absence of auxiliary data on attention to the murder, we cannot be certain respondents “received the treatment.” Therefore, we interpret *post-Shepard* as an ITT effect. However, Figure 7 suggests the murder received significant media attention such that it might shift mass attitudes.

Second, given possible differences in sampling between the two surveys, our statistical conclusions may be due to sample composition. Balance tests between the two surveys demonstrate limited baseline covariate imbalance (Figure 8a), suggesting that sample composition does not drive our results.

Third, unlike Studies 1 and 2, we cannot assess an immediate effect of anti-gay violence exposure even though the two surveys were fielded near Shepard’s murder. There are 4 months between the surveys with the *moral wrong* outcome (June–October 1998). Therefore, our *post-Shepard* estimates may be due to intervening factors or secular progressive time trends. However, there is no anti-gay violence with the level of media coverage Shepard’s murder garnered in between the field periods (Figure 7). Crowdsourced evidence suggests the last prominent instance of anti-LGBTQ+ violence prior to Shepard’s murder was not between June and October 1998, but on February 1997 (the Otherside Lounge Bombing).<sup>31</sup> Indeed, between June and September 1998, there were zero *New York Times* articles related to anti-gay hate crimes. Conversely, on

the month of Shepard’s murder (October 1998), there were 17 *NYT* articles related to anti-gay hate crimes (Supplementary Figure D15). Two other intervening factors in 1998 may explain our results: (1) President Clinton signing an executive order against sexual orientation discrimination and (2) Tammy Baldwin’s House election (the first lesbian congressperson). We provide evidence these events are unlikely explaining our *post-Shepard* coefficient estimates (DSM Section 4.9 and Supplementary Section D.4).

Moreover, we rule out if our results are due to secular outcome time trends by conducting a temporal placebo test and demonstrating *moral wrong* levels do not change between April 1997 and June 1998 (Figure 8b).<sup>32</sup> These results suggest that prominent pre-study events, such as Ellen DeGeneres’s televised coming out in April 1997, are not driving our results. Despite Study 3’s shortcomings, we believe that the design provides sufficient complementary evidence to Studies 1 and 2 along with suggestive evidence our theory generalizes beyond Pulse.

### Results

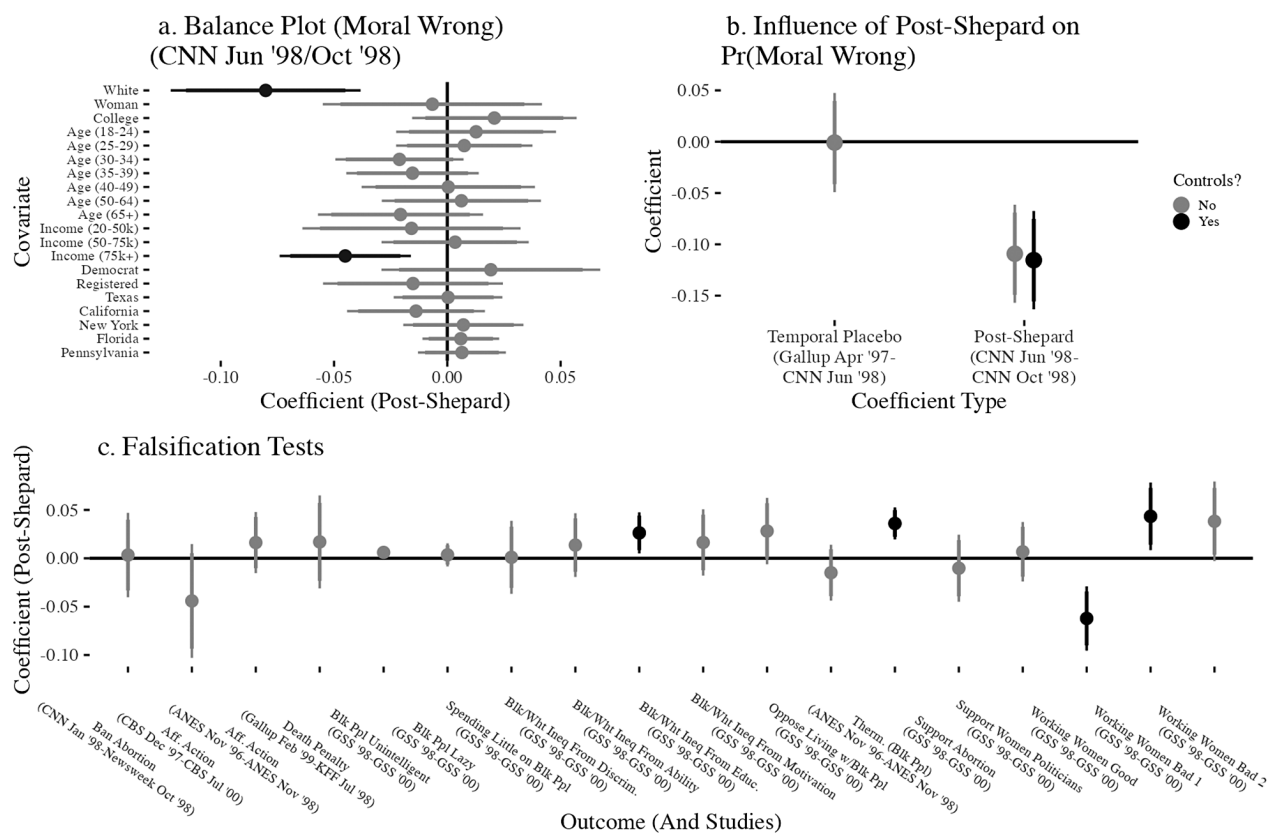
Consistent with **H1**, Figure 8b shows that respondents interviewed *post-Shepard* were 12 percentage points less likely to report homosexuality is morally wrong with or without covariate adjustment, 24% of the outcome standard deviation ( $p < 0.001$ ).

We conduct falsification tests on outcomes related to non-LGBTQ+ marginalized groups to rule out secular supportive trends toward marginalized groups driving our results (Figure 8c).<sup>33</sup> Only 4 out of 18 outcomes are significant, and the *post-Shepard* coefficient is not consistently in support of non-LGBTQ+ groups, suggesting no systematic secular trend driving our results (see

<sup>31</sup> [https://en.wikipedia.org/wiki/History\\_of\\_violence\\_against\\_LGBT\\_people\\_in\\_the\\_United\\_States](https://en.wikipedia.org/wiki/History_of_violence_against_LGBT_people_in_the_United_States).

<sup>32</sup> See DSM Section 4.2 for more temporal placebo test details.

<sup>33</sup> See DSM Section 4.7 for more falsification test outcome details.

**FIGURE 8. Respondents Interviewed *Post-Shepard* Were Less Likely to Believe Homosexuality Is Morally Wrong**

Note: Panel (a) characterizes balance between respondents interviewed pre- and post-Shepard's murder. Black coefficients are significant, gray not. Panel (b) characterizes (1) the influence of being interviewed on June 1998 relative to April 1997 on the belief homosexuality is morally wrong (temporal placebo) and (2) the influence of being interviewed *post-Shepard* on *moral wrong*. Panel (c) characterizes falsification tests assessing the influence of *post-Shepard* on non-LGBTQ+ group attitudes. 95% CIs displayed from robust SEs. See DSM Tables 176–179 for regression tables on balance tests, the temporal placebo, the *post-Shepard* coefficient estimates, and falsification tests.

DSM Section 4.6 for more details). Like Study 1, the null effects of *post-Shepard* on abortion support suggest that our results are not driven by secular shifts in social conservatism and/or religiosity.

### Temporal Persistence

To assess the persistence of attitudinal shifts *post-Shepard*, we identify six surveys between 1978 and 2004 where the *moral wrong* item was asked (Harris Interactive 2004; Yankelovich Partners 1978; 1992; 2001),<sup>34</sup> allowing us to evaluate trends in the public's belief that homosexuality is morally wrong pre- and *post-Shepard*. We do not use the CNN June 1998 poll in Figure 9 in our assessment of temporal persistence (see DSM Section 4.5 for details as to why).

Figure 9 displays event study estimates comparing *moral wrong* levels in five surveys between 1978 and 2004 to a survey fielded prior to Shepard's murder

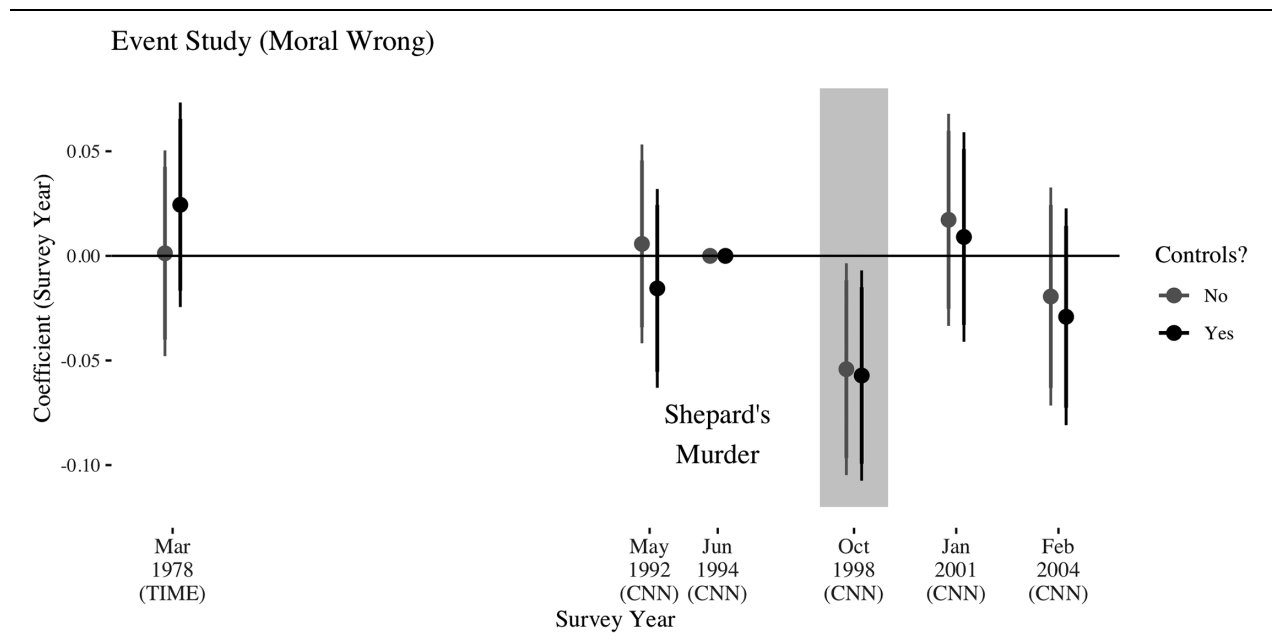
in 1994. From 1978 to 1994, belief in *moral wrong* is remarkably stable. Respondents surveyed in 1994 are not statistically distinct from respondents surveyed in 1992 or 1978. Consistent with our initial temporal placebo test, these findings suggest an absence of progressive attitudinal trends toward gay people prior to Shepard's murder. However, in October 1998, immediately after Shepard's murder, there is a statistically distinguishable decrease in *moral wrong*. But the decrease in the belief homosexuality is immoral is not sustainable. The mass public's belief in the notion homosexuality is immoral returns to levels before Shepard's murder by 2001 and 2004. Consistent with **H2**, our results suggest that Shepard's murder motivated a decrease in negative beliefs concerning "homosexuals," but this decrease was not sustainable.

### Individual-Level Heterogeneity

We test **H3a,b** by assessing if the *post-Shepard* coefficient is stronger among (a) non-whites and women and

<sup>34</sup> See DSM Section 4.4 for details on the six surveys.

**FIGURE 9. Belief in Moral Wrong Is Stable between 1978 and 2004 with the Exception of the Moment Shepard Was Murdered**



Note: Reference study is the 1994 CNN poll. Color denotes the inclusion/exclusion of controls (age, education, gender, partisanship, and race). Shaded estimate denotes Shepard's murder (October 1998). All estimates use survey weights. All covariates scaled between 0 and 1. See DSM Table 183 for a corresponding regression table. 95% CIs displayed derived from robust SEs.

(b) Democrats.<sup>35</sup> Given the absence of (a) county-level geographic data in the two 1998 CNN polls and (b) state-level LGBT population information in the 1990s, we cannot test **H3c**. We find some evidence consistent with **H3a** (Supplementary Table D7). Although there is no *post-Shepard* heterogeneity by gender, non-whites are less likely to believe homosexuality is morally wrong relative to whites *post-Shepard*. Whites are 7 percentage points less likely to believe homosexuality is morally wrong *post-Shepard*, whereas non-whites are 22 percentage points less likely, 44% of the pre-Shepard outcome standard deviation. Likewise, we find evidence supporting **H3b** (Supplementary Table D7). The *post-Shepard* effect appears driven by Democrats. Democrats are 22 percentage points less likely to believe homosexuality is morally wrong *post-Shepard*, whereas non-Democrats are 2 percentage points less likely.

**EVENT 3: THE CLUB Q MASSACRE**

Study 4 mitigates two shortcomings with Studies 1–3. First, Studies 1–3 all analyze initially highly salient events—that is, high media coverage attention.

However, consistent with **H4** and the *FPVR* model, relatively initially less salient violent events may be less likely to motivate prosocial attitudes toward segments of the LGBTQ+ community. Study 4 allows us to evaluate the consequences of indirect exposure to a putatively high-profile, but relatively initially less salient, instance of violence against LGBTQ+ group members: the 2022 Club Q massacre. Consequently, Study 4 allows us to test **H4** and broader *FPVR* model implications related to initial event salience. Second, the outcomes in Studies 1–3 do not explicitly reference broader LGBTQ+ segments beyond gays and lesbians (e.g., transgender people). Conversely, Study 4 examines not only the same Study 2 outcomes using the 2022 PI S-IAT survey, but also additional outcomes characterizing negative attitudes toward transgender people in the 2022 PI Transgender Implicit Association Test (PI T-IAT) survey.<sup>36</sup> Therefore, Study 4 allows us to examine the consequences of violence against LGBTQ+ group members on mass attitudes explicitly related to transgender people, a small, politicized, population (Lewis et al. 2022).

On November 19, 2022, in Colorado Springs, CO, Anderson Aldrich entered an LGBTQ+ nightclub, Club Q, and killed five clubgoers, including two trans people, while injuring 25 others with an AR-15-style

<sup>35</sup> Data on liberalism are unavailable in the 1998 CNN polls, but Democratic partisanship is an appropriate proxy given its strong association with liberalism.

<sup>36</sup> PI started collecting transgender attitude data in 2020 (<https://osf.io/fb29q/>).

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rifle.<sup>37</sup> Aldrich was eventually incapacitated by club-goers and apprehended by police. Evidence suggests that the violence was bias-motivated. Aldrich pleaded “no contest” in court to two hate crime charges.<sup>38</sup>

The media and some elites reacted sympathetically to the violence. President Biden and Transportation Secretary Buttigieg immediately expressed condolences.<sup>39</sup> However, unlike the Pulse massacre and Shepard’s murder, the elite response was relatively polarized. Buttigieg blamed the shooting on growing Republican anti-LGBTQ+ rhetoric.<sup>40</sup> Tucker Carlson and several right-wing commentators blamed the violence on purported “grooming” activity from LGBTQ+ people.<sup>41</sup> Republican politicians who expressed condolences were criticized for simultaneously engaging in anti-LGBTQ+ rhetoric.<sup>42</sup> LGBTQ+ advocates noted a rise in queerphobic posts across social media platforms post-shooting.<sup>43</sup>

Moreover, relative to Shepard’s murder and the Pulse massacre, the Club Q massacre was less salient. First, there were less *NYT* articles related to the Club Q massacre 2 months after the event relative to Shepard’s murder and the Pulse massacre (Supplementary Figure E18). Second, regression discontinuity-in-time estimates suggest that although online articles on topics related to mass shootings, the LGBT community, and hate crimes discontinuously increased after Club Q, there were more online articles on topics related to mass shootings and the LGBT community after Pulse (Supplementary Figures E19 and E20 and Supplementary Table E8). Third, Google search data demonstrate that there was more attention to mass shootings, LGBT people, and LGBT hate crimes immediately during Pulse relative to immediately during the Club Q massacre (Supplementary Figure E21). Therefore, consistent with the *FPVR* model and **H4**, although Club Q was relatively high-profile, its lower-profile status vis-à-vis Pulse and Shepard’s murder suggests that it may be less likely to initially shift mass attitudes.

## Study 4

### Data and Design

We use data on U.S. respondents self-selecting into the 2022 PI S-IAT ( $N = 184,824$ , 506 daily average

respondents) and T-IAT ( $N = 85,303$ , 233 daily average respondents) surveys. See DSM Section 5.1 for information on S-IAT and T-IAT sample composition and representativeness (Xu et al. 2022a; 2022b).

The S-IAT outcomes are the same as Study 2’s (anti-gay *D-score*, *heterocentrism*, and *straight bias*). The three T-IAT outcomes are similar but slightly different. The anti-trans *D-score* is measured by assessing the speed by which respondents associate negative/positive attributes (words) to images of trans/cis celebrities. Higher values suggest respondents associated negative/positive attributes to trans people faster/slower than cis people. *Ciscentrism* measures relative warmth toward cisgender people vis-à-vis trans people. *Cis bias* is a 7-point scale measuring preferences for cisgender relative to trans people. See DSM Section 5.2 for more T-IAT outcome measurement details. Prior research finds that the T-IAT outcomes are correlated with anti-trans policy preferences (Axt et al. 2021). All outcomes are rescaled between 0 and 1.

The main independent variable is *post-Club Q*, an indicator equal to 1 if a respondent self-selects into the S-IAT or T-IAT after November 19, 2022. The *post-Club Q* coefficients will be *negative* if prosocial attitudes increase *post-Club Q*.

We implement another UESD, estimating the influence of *post-Club Q* 5–40 days in 5-day intervals post-massacre.<sup>44</sup> We assess covariate balance for these bandwidth samples between respondents taking the S-IAT/T-IAT pre- and *post-Club Q* (Supplementary Figures E22 and E23).<sup>45</sup> Covariate imbalance increases as sample bandwidth increases, likely due to unobservable secular trends. Therefore, we primarily interpret the 20- and 15-day bandwidth samples in the S-IAT and T-IAT, respectively, where there is the least imbalance (4/12 and 1/12 covariates imbalanced, respectively).

### Results

The *post-Club Q* coefficient is null across all outcomes in the 20-day bandwidth sample for the S-IAT and in the 15-day bandwidth sample for the T-IAT (Figure 10). Although *post-Club Q* coefficients in larger bandwidth samples suggest a decrease in the anti-trans and anti-gay *D-score* (e.g., the 40-day bandwidth samples), these estimates should be viewed skeptically, given that they possess high covariate imbalance and are more likely to be perturbed by unobservable secular trends (Supplementary Figures E22 and E23). Consistent with the *FPVR* model and **H4**, less salient violent events like Club Q do not motivate attitudinal shifts like more salient events (e.g., Pulse or Shepard’s murder).

### Individual-Level Heterogeneity

We test **H3a–c** and assess if the *post-Club Q* coefficient is larger among (a) non-whites and women, (b) liberals,

<sup>37</sup> <https://www.cnn.com/2022/11/20/us/colorado-springs-shooting-gay-nightclub>.

<sup>38</sup> <https://www.pbs.org/newshour/nation/club-q-shooter-who-killed-5-gets-life-in-prison>.

<sup>39</sup> <https://www.denver7.com/news/local-news/we-are-devastated-officials-react-to-deadly-mass-shooting-at-club-q-in-colorado-springs>.

<sup>40</sup> <https://www.yahoo.com/video/pete-buttigieg-says-political-attacks-145452238.html>.

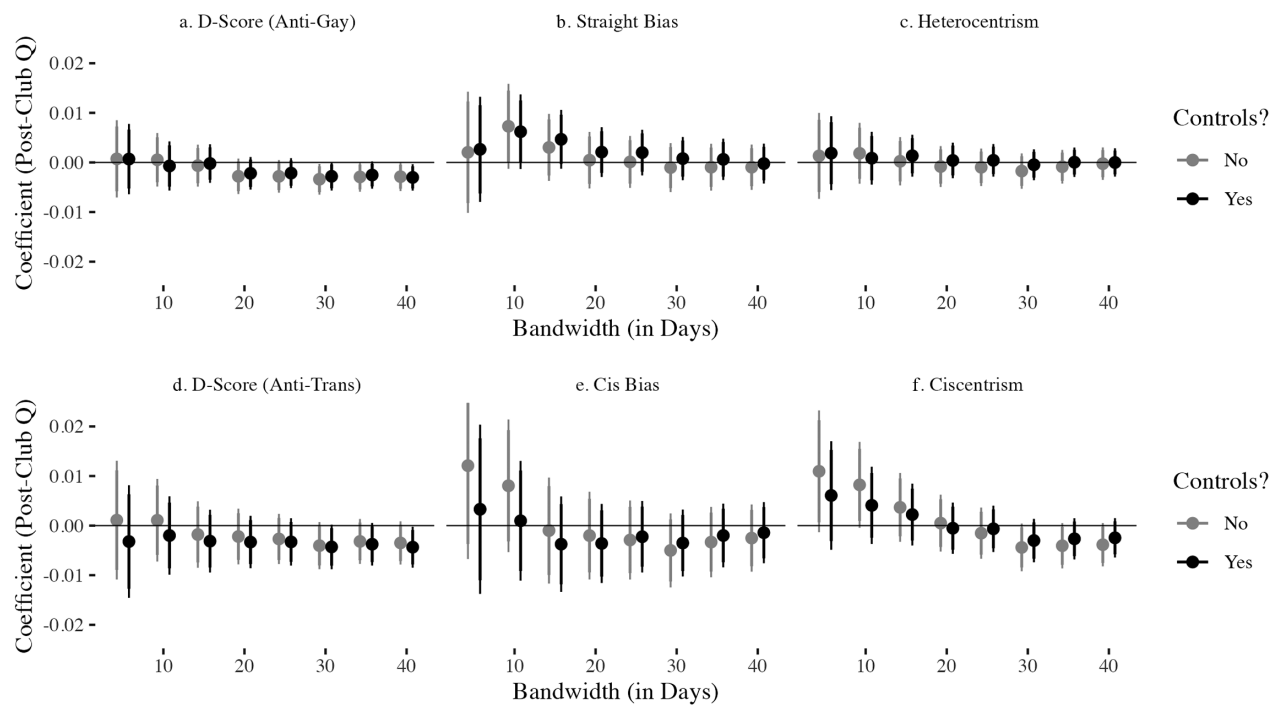
<sup>41</sup> <https://www.nbcnews.com/tech/internet/right-wing-influencers-media-double-anti-lgbtq-rhetoric-wake-colorado-rcna58371>.

<sup>42</sup> <https://www.durangoherald.com/articles/lauren-boebert-defends-her-past-anti-lgbtq-and-anti-trans-tweets/>.

<sup>43</sup> See [https://www.isdglobal.org/digital\\_dispatches/groomer-discourse-intensifies-and-neo-nazis-celebrate-in-wake-of-colorado-springs-attack/](https://www.isdglobal.org/digital_dispatches/groomer-discourse-intensifies-and-neo-nazis-celebrate-in-wake-of-colorado-springs-attack/) and <https://apnews.com/article/technology-shootings-business-social-media-colorado-75a3c597a60dca0f116d5deb6a6c1a6b>.

<sup>44</sup> There are no data after 40 days *post-Club Q* since the 2022 surveys end on December 2022.

<sup>45</sup> Baseline control covariates are measured like Study 2.

**FIGURE 10. Influence of *Post-Club Q* on Anti-Gay, Anti-Trans Attitudes**

*Note:* The x-axis is the bandwidth sample (1–40 days). The y-axis is the *post-Club Q* coefficient. Panels characterize different outcomes. The top/bottom three panels characterize estimates from the 2022 PI S-IAT/T-IAT data. Black coefficients are from models adjusting for controls, gray otherwise. 95% CIs displayed from HC2 robust SEs. See DSM Tables 185 and 186 for regression tables characterizing these estimates.

and (c) individuals living in geographic contexts with more LGBTQ+ group members using the 20- and 15-day bandwidth samples for the S-IAT and T-IAT. We find limited heterogeneity across these characteristics (see Supplementary Tables E9 and E10). The only statistically significant heterogeneity we identify is that the *post-Club Q* coefficient is negative and stronger among women for the *Cis Bias* outcome (Supplementary Table E10). However, we do not identify heterogeneity by gender in the S-IAT data or the other two T-IAT outcomes. Therefore, we interpret the influence of *post-Club Q* as largely homogeneous.

### Evidence from Less Salient Violent Events

A limitation with Study 4 is that although the Club Q massacre was less salient than Pulse and Shepard's murder, the null results may be due to the arguably more polarized temporal context given the recent rise of Republican anti-LGBTQ+ rhetoric and policies. Anti-LGBTQ+ laws implemented in Republican states (Supplementary Figure E24) and right-wing anti-LGBTQ+ protests have increased in the past few years (Supplementary Figure E25). Indeed, prior research shows LGBTQ+ mass attitudes may entrench in polarized contexts (Lewis et al. 2022). The *FPVR* model also corroborates this limitation,

since sympathetic responses by bipartisan elites may be necessary to motivate prosocial mass attitudes (Figure 2).

To circumvent this limitation, we use crowdsourced data on less salient violent incidents against LGBTQ+ people between 2010 and 2022 and evaluate the influence of these events on prosocial attitudes.<sup>46</sup> We demonstrate the incidents outside of those in Studies 1–4 are significantly less salient (Supplementary Figure F26). We identify 3,570, 442, and 358 *NYT* article hits related to the Pulse massacre, Shepard's murder, and the Club Q massacre, respectively (Supplementary Figure F26c). Conversely, the next most salient violent incident against LGBTQ+ group members between 2010 and 2022 was Mark Carson's May 2013 murder with 30 hits (Figure F26b). Consistent with **H4**, other less salient violent incidents against LGBTQ+ group members outside those in Studies 1–4 have largely null effects on mass attitudes toward gay people (Supplementary Figure F27). The few significant effects are not consistently in the same substantive direction, implying a random, unsystematic, causal process.

<sup>46</sup> [https://en.wikipedia.org/wiki/History\\_of\\_violence\\_against\\_LGBT\\_people\\_in\\_the\\_United\\_States](https://en.wikipedia.org/wiki/History_of_violence_against_LGBT_people_in_the_United_States).



## LIMITATIONS AND ADDITIONAL ROBUSTNESS CHECKS

Our analyses have limitations. First, one issue with our analytic approach is that we use several distinct outcomes across different time periods while assuming they measure the same concept (i.e., prosocial LGBTQ+ attitudes). We show this is an advantage, rather than a shortcoming, in DSM Section 7.

Second, although we provide evidence respondents likely perceived and responded to violence against LGBTQ+ people in a manner consistent with the *FPVR* model, we cannot be certain respondents “received the treatment.” Future research should use designs encouraging stronger treatment reception (e.g., survey experiments) to assess if our analyses underestimate effects and/or temporal persistence. However, unlike designs offering stronger treatment reception, a (tragic) advantage of our design(s) is that they derive effects based on “real-world,” externally valid events.

Third, our evidence has not tested all *FPVR* model mechanisms. Our design is advantageous in that we can assess the effects of violence on prosocial attitudes in an uncontrolled environment with plausible identification assumptions, undercutting demand effects or external invalidity. But, our data were not directly collected to test our hypotheses, making mechanism tests difficult. To the extent we can provide evidence for *FPVR* model mechanisms (Figure 2), we show that initial salience is necessary to motivate prosocial attitudes at the outset, that declines in salience over time are concomitant with decay in prosocial attitudinal shifts, and that there is limited support shared marginalization, ideology, and LGBTQ+ geographic context consistently moderate the initial adoption of prosocial attitudes.

Future research should test other *FPVR* model mechanisms (Figure 2). Psychological insights are promising. Violence exposure’s influence on prosocial beliefs and their sustainability may be mediated through positive emotional responses toward marginalized groups (e.g., empathy, sympathy, anger, and guilt) (Branscombe and Miron 2004; Harth, Kessler, and Leach 2008). Additionally, future research should assess how media frames condition the public’s attitudinal responses. During Shepard’s murder and Pulse, the media and elites framed the victims sympathetically (instead of unsympathetically). Concomitantly, prior research suggests the media used episodic frames focusing on perpetrator motivations instead of thematic frames emphasizing societal queerphobia (Ott and Aoki 2002; Zahzah 2019). Framing differences may condition prosocial responses and their temporal durability.

Fourth, another limitation is that we only focus on *indirect* exposure to *high-profile* violence. *Direct observation* of smaller-scale quotidian violence against LGBTQ+ group members (e.g., observing hate crimes, assault, and verbal abuse) may have a stronger, durable influence on prosocial beliefs. Future research should explore how different violence exposure types motivate prosocial beliefs.

Fifth, another limitation is that we only explore attitudinal shifts, not behavior. See DSM Section 1.7

for reasoning and evidence the lack of behavioral emphasis may not be a shortcoming.

## CONCLUSION

We present an *FPVR* model to explain how indirect exposure to civilian violence against marginalized groups may influence prosocial attitudes toward targeted groups. Across four studies and three events, we provide evidence supporting the model and show indirect civilian violence against LGBTQ+ group members increases prosocial attitudes toward segments of the LGBTQ+ community. However, these prosocial responses are not temporally sustainable and less salient events do not motivate prosociality at the outset. Our core contribution is that we repeatedly demonstrate indirect exposure to salient civilian violence against marginalized groups may not sustainably undercut negative attitudes toward these groups. The *FPVR* model provides a general framework that can be tested and theoretically built upon in domains outside anti-LGBTQ+ violence, such as violence against other marginalized groups (e.g., non-whites, immigrants, and women).

Interestingly, we find limited individual-level heterogeneity in Studies 1, 2, and 4,<sup>47</sup> and some evidence non-whites and Democrats are more likely to adopt prosocial attitudes after Shepard’s murder in Study 3. The absence of heterogeneous effects in Studies 1 and 2 are not necessarily surprising. The *Parallel Publics* thesis posits salient events can generate common information exposure and therefore homogeneous attitudinal responses across population subgroups (Page and Shapiro 2010). Relatedly, there was mainstream agreement among media and elites the Pulse massacre was tragic and reflected illegitimate behavior. Thus, messaging associated with the massacre was not a “group cue” that could motivate prosocial responses among some subgroups but not others (Zaller 1992). Indeed, the effect homogeneity we identify is consistent with prior evidence showing *SSM support* moves in parallel over time across partisan and social subgroups (Coppock 2023). Study 3’s individual-level heterogeneity may be a function of temporal context. Relative to 2016, racial violence was salient in 1998. James Byrd was murdered 4 months before Shepard’s murder. The Rampart LAPD scandal was also underway (involving the police beating of Ishmael Jimenez). Therefore, non-whites may have been primed to adopt prosocial attitudes toward groups facing conceivably analogous violence. Likewise, the mass public was less acceptant toward LGBTQ+ people in the 1990s. Therefore, socially conservative Republicans and independents may have been resistant to sympathetic messaging after Shepard’s murder relative to liberal Democrats. Finally, Study 4’s limited heterogeneity may be due to Club Q’s limited salience vis-à-vis Pulse and Shepard’s murder.

<sup>47</sup> An alternative hypothesis to **H3b** is political moderates may be more likely to adopt prosocial attitudes post-violence given their attitudes are less crystallized. We find no evidence supporting this hypothesis (Supplementary Tables B1, C5, and D7).

What would generate durable effects? The *FPVR* model suggests sustained media attention may motivate sustained attitudinal shifts (Figure 2). Disturbingly, salient violent event *recurrence* may facilitate sustainable prosocial shifts. Additionally, the *FPVR* model posits elites play a role in making violent incidents salient. Therefore, elites who continue to strategically amplify issues related to a specific event long after occurrence may sustain attitudinal shifts (Birkland 1998; Zaller 1992). The masses may also play a role in facilitating continued event salience. Reny and Newman (2021) show prosocial attitudinal responses to anti-Black violence are relatively durable if the violence is concomitant with (a very large and sustained) social protest. Moreover, perhaps *direct* or *proximal*, as opposed to *indirect*, violence exposure is necessary to durably shift mass attitudes, consistent with prior work (Hadzic, Carlson, and Tavits 2020; Lupu and Peisakhin 2017; Mironova and Whitt 2018). The *FPVR* model could also be extended by evaluating effect sustainability conditional on victim or perpetrator characteristics (e.g., state- vs. civilian-perpetrated), and the scale of violence. We leave it to future research to continue to develop new theoretical insights, extend the *FPVR* model, and assess possibilities for durable effects.

## SUPPLEMENTARY MATERIAL

To view supplementary material for this article, please visit <https://doi.org/10.1017/S0003055424000947>.

## DATA AVAILABILITY STATEMENT

Research documentation and data that support the findings of this study are openly available at the American Political Science Review Dataverse: <https://doi.org/10.7910/DVN/PA2XXO>.

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## CONFLICT OF INTEREST

The authors declare no ethical issues or conflicts of interest in this research.

## ETHICAL STANDARDS

The authors affirm this research did not involve human participants.

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