

The Effect of a Supreme Court Decision Regarding Gay Marriage on Social Norms and Personal Attitudes



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Abstract

We propose that institutions such as the U.S. Supreme Court can lead individuals to update their perceptions of social norms, in contrast to the mixed evidence on whether institutions shape individuals' personal opinions. We studied reactions to the June 2015 U.S. Supreme Court ruling in favor of same-sex marriage. In a controlled experimental setting, we found that a favorable ruling, when presented as likely, shifted perceived norms and personal attitudes toward increased support for gay marriage and gay people. Next, a five-wave longitudinal time-series study using a sample of 1,063 people found an increase in perceived social norms supporting gay marriage after the ruling but no change in personal attitudes. This pattern was replicated in a separate between-subjects data set. These findings provide the first experimental evidence that an institutional decision can change perceptions of social norms, which have been shown to guide behavior, even when individual opinions are unchanged.

Keywords

social influences, social perception, prejudice, attitudes, intergroup dynamics, open data, open materials, preregistered

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After the Supreme Court legalized interracial marriage in the 1967 decision *Loving v. Virginia*, Americans' support for interracial marriage climbed from under 25% to its present-day levels of over 80% (Newport, 2013). Analysts suggested that the Court's decision helped fuel the shift in public opinion (Marshall, 1987; Schacter, 2009). Whether and when institutional decisions actually change individual attitudes are questions that social scientists have long pursued. Studies have suggested that under some conditions, institutions are responsible for changing personal attitudes about social or political issues (e.g., Bartels & Mutz, 2009; Beaman, Chattopadhyay, Duflo, Pande, & Topalova, 2012; Bishin, Hayes, Incantalupo, & Smith, 2016; Clawson, Kegler, & Waltenburg, 2001; Hoekstra, 1995; Mondak, 1992). However, attitudes do not always change easily, particularly when they concern contentious issues. Personal experiences and religious and political views often anchor individuals' attitudes, which makes them less flexible (e.g., Johnson

& Eagly, 1989; Jost, Federico, & Napier, 2009; Prentice, Gerrig, & Bailis, 1997; Sherif & Hovland, 1961).

Questions about the social influence of institutional decisions are nearly always posed one way—does the decision change an individual's personal attitude toward the issue? We hypothesized that institutional decisions may change a different, also consequential viewpoint: an individual's perception of social norms. Norm perceptions are impressions of what opinions or behaviors are common among, or considered desirable by, a group of people (Cialdini & Goldstein, 2004). The perception that “most Americans support interracial marriage” is an example of a perceived social norm (contrasted with “I

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support interracial marriage,” which is a statement of an individual attitude). Extensive research has demonstrated that norm perceptions are consequential because they can guide important individual behaviors, such as energy conservation, voting, and alcohol consumption (Tankard & Paluck, 2016). Individuals use norms as a guide to behavior because they are motivated to be accurate in their social judgment and also because they wish to avoid social rejection (Cialdini & Goldstein, 2004). Thus, social norms may not always align with personal attitudes—individuals may perceive shifts in collective opinion without changing their own mind (Paluck, 2009; Sherif, 1936). In some cases, perceptions of norms motivate changes in attitudes (Stangor, Sechrist, & Jost, 2001). But despite their relevance for understanding social and behavioral change, perceived norms are rarely measured in public opinion polls.

We predicted that institutional decisions could alter perceptions of social norms because these perceptions are known to be dynamically updated over time as individuals take cues from their environment, such as the public behavior of group members or summary information about a group (Miller & Prentice, 1996; Paluck & Shepherd, 2012). We theorized that institutions (defined as entities that “govern, educate, or organize a reference group and their social interactions”; Tankard & Paluck, 2016, p. 192) are an additional cue regarding the content and direction of social norms.

First, because they represent collectives, institutions may be able to change how individuals perceive the group—for example, perceptions of what American people believe now (Tankard & Paluck, 2016). These are perceived norms of the status quo. Although an institution such as the Supreme Court is intended to be insulated from public opinion pressures, individuals may believe that it considers public opinion purposefully, to maintain support, or incidentally, because individual judges are subject to the same social forces as the public (e.g., Friedman, 2009; Mishler & Sheehan, 1996; Rosenberg, 1991). For either reason, if individuals believe that an institution has access to accurate information about public opinion, or if an institution is democratic in nature, they may view an institutional decision as a signal of where the public stands and update their own subjective perception of public opinion.

Likewise, institutional decisions may be understood as an expert projection of the direction in which public opinion or behavior will move (or should move) in the future. At least for institutions that are trusted to determine appropriate behavior and represent a group’s best interests (i.e., “legitimate” institutions; Tyler & Jackson, 2014), we hypothesized that decisions may signal where collective opinion is headed. These perceptions are a type of directional perceived norm, that is, what the collective will be thinking or doing in the future.

Additional factors undoubtedly contribute to institutional influence on perceived social norms. For example, when an institution is highly visible, individuals are aware that many other group members are simultaneously observing its decisions. This awareness of shared attention, reinforced by mass media, may contribute to changes in perceptions of what the group currently believes or will believe (Chwe, 2003; Shteynberg, Bramlett, Fles, & Cameron, 2016). Our goal at present was not to disentangle various explanations for the influence of institutional decisions on social norms, but rather to provide the first experimental test of whether a causal relationship exists between major institutional decisions and perceived social norms.

As we have noted, personal attitudes also respond to institutional decisions under certain conditions. First, institutions seem to influence personal attitudes through the persuasiveness of the reasons behind their decisions and by engaging individuals in deeper thinking—not, by contrast, through a signaling process in which an institutional endorsement is accepted unthinkingly (Bartels & Mutz, 2009). Thus, for issues such as gay marriage on which attitudes are guided less by deliberative reasoning and more by moral instinct (Powell, Quadlin, & Pizmony-Levy, 2015), institutions are less likely to have strong effects on personal attitudes. Second, studies show that attitudes are influenced when the institutional decision is experienced personally by an individual—for example, if the decision affects local community conditions (Hoekstra, 2000). In India, for example, institutional quotas that increased citizens’ exposure to local female politicians changed attitudes toward female leadership (Beaman et al., 2012; see also Flores & Barclay, 2016; Kreitzer, Hamilton, & Tolbert, 2014).

Given that personal attitudes are more strongly tied to ideology and personal experience than to social norm perceptions (e.g., Johnson & Eagly, 1989; Jost et al., 2009; Prentice et al., 1997; Sherif & Hovland, 1961), some of the conditions that limit institutional influence over attitudes may not apply to institutional influence over perceived norms. Thus, in the studies reported here, we sought to identify whether an institutional decision could influence social norm perceptions, even under conditions in which one might not expect attitude change.

Understanding the causal effects of an actual institutional decision is difficult without the ability to randomize exposure to the institutional decision (see Beaman et al., 2012) or without prospective time-series data testing how individuals change prior to and following an institutional decision (Bishin et al., 2016). The present research capitalized on the respective strengths of experimental and time-series strategies, presenting evidence for the causal influence of the U.S. Supreme Court’s 2015 *Obergefell v. Hodges* ruling on

gay marriage. Each study examined whether the Court's decision to allow same-sex couples to marry and to recognize same-sex unions changed individuals' perceptions of American social norms regarding gay marriage. We tested our prediction that this institutional decision would lead Americans who are not lesbian, gay, bisexual, transgender, queer, intersex, or asexual (LGBTQIA) to perceive stronger and increasing public support for gay marriage (present and future social norms), even if personal attitudes toward gay marriage and gay people were left unchanged. We further explored whether behavioral support for gay marriage increased in the same participants following the Supreme Court decision.

Study 1a

Method

Before investigating the relationship between the Supreme Court ruling and perceived social norms and attitudes in the real world, we tested these relationships in a controlled experimental setting. Conducted prior to the ruling, Study 1a isolated the effects of learning about the institutional decision from the effects of other influences, such as news coverage of the ruling and individuals' observation of peer reactions to the ruling. Specifically, we experimentally manipulated participants' perceptions of the likelihood that the Supreme Court would rule in favor of same-sex marriage.

Participants. Participants (52% female, 48% male; mean age = 34.01 years) were recruited online via Amazon Mechanical Turk. The final sample size was 1,673 after the exclusion of 507 participants for failing attention checks and 457 participants for not meeting eligibility requirements. Participants were retained in the sample if they were U.S. citizens, if they did not indicate an LGBTQIA identity, and if they passed a series of attention checks. Including participants who did not pass attention checks does not change any of the study's results. A power analysis indicated that we would need to recruit a sample of approximately 2,600 participants to have 90% power to detect the hypothesized effect, assuming an approximate effect size (Cohen's d) of 0.15 and anticipating a need to exclude 29% of the Mechanical Turk respondents, on the basis of a pilot study (see the Supplemental Material available online).

Procedure. Participants were invited to read a brief article about the likely outcome of the upcoming Supreme Court ruling on gay marriage, according to the ostensible in-depth analysis of a panel of Supreme Court scholars. To encourage careful reading, we displayed the text of the

analysis sequentially across a series of pages. Each participant was randomly assigned to read either a version entitled "Supreme Court likely to rule in favor of gay marriage" (*positive-ruling condition*) or a version entitled "Supreme Court unlikely to rule in favor of gay marriage" (*negative-ruling condition*). The following is a sample of how the text was manipulated across these two versions:

A panel of Supreme Court scholars recently conducted in-depth analysis of this issue and determined that it is extremely [likely/unlikely] that the Court will rule in favor of fully legalizing gay marriage. "There's a lot to consider, but based on our extensive analysis, we are confident that gay marriage [will be legalized nationwide by the Supreme Court very soon/will not be legalized nationwide by the Supreme Court anytime soon]," reported a member of the panel.

We then asked participants to imagine the described Supreme Court ruling actually coming to pass (as they might observe it on the news), adapting Carroll's (1978) instructions for imagining a political outcome. Participants were compensated 30¢ for participating.

Finally, as a manipulation check, we asked participants to indicate their "prediction regarding whether the U.S. government will legalize gay marriage at the state level" using a scale from -4 (*certain not to become legal*) to 4 (*certain to become legal*).

Survey items. Participants responded to a series of dependent measures. We concluded with questions about demographics (age, gender, race) and other relevant social views and behaviors, such as engagement in political discussion (see the Supplemental Material for more information).

Perceived status quo norms. Perceptions of status quo norms in support of gay marriage were measured using the mean score of two items ("To what extent do you think Americans oppose or support gay marriage?" and "To what extent do you think Americans oppose or support making gay marriage legal in the United States?"), to which participants responded using a scale from -4 (*strongly oppose*) to 4 (*strongly support*), $\alpha = .90$.

Perceived directional norms. Perceptions of the direction and speed of social-norm change in support of gay marriage were measured using the mean score of two items ($\alpha = .78$). The first was "To what extent do you think that support for gay marriage will or will not increase in the United States in the future?" (answered on a scale from 1, *will not increase at all*, to 9, *will increase greatly*). The second was "How much momentum, if any,

do you think the movement to make gay marriage legal currently has in the United States?" to which participants responded using a scale from 1 (*no momentum at all*) to 9 (*strong momentum*).

Personal attitudes toward gay marriage. Attitudes in support of gay marriage were measured using the mean score of two items ("To what extent do you oppose or support gay marriage?" and "To what extent do you oppose or support making gay marriage legal in the United States?"), to which participants responded using a scale from -4 (*strongly oppose*) to 4 (*strongly support*), $\alpha = .98$.

Rating of gay people on feeling thermometer. Ratings of people who are gay were measured using a single-item feeling thermometer (University of Michigan, 1999; "How warm or cold do you feel toward people who are gay? Please indicate your response by sliding the bar below and leaving it at a particular 'temperature'"), to which participants responded using a scale from 0 (*cold, unfavorable*) to 100 (*warm, favorable*).

Behavior. As a behavioral measure, we asked participants whether they were interested in being mailed a free sticker to show support for an issue of their choice and told them that a link would be provided to an external Web site containing more information at the end of the study. They indicated whether they did or did not want a sticker, and if they did, whether they wanted one in support of environmental conservation, gay marriage, or a different issue of their choice. We measured the rate of selecting gay marriage as opposed to a different sticker or no sticker.

Trust in and perceived representativeness of the Supreme Court. Respondents' reported trust in the Supreme Court and belief that the Court represents public opinion was measured using the mean score of two items ($\alpha = .80$). The first was "To what extent do you mistrust or trust the U.S. Supreme Court as an institution?" (answered on a scale from -4 , *strongly mistrust*, to 4, *strongly trust*). The second was "To what extent do you think decisions made by the U.S. Supreme Court do or do not represent public opinion in the United States?" to which participants responded using a scale from -4 (*do not represent at all*) to 4 (*strongly represent*).

Political orientation. Political orientation was measured using a single item ("Where do your political views best fall on the following scale?"), to which participants responded using a scale from 1 (*very liberal*) to 7 (*very conservative*).

Results

Our manipulation check showed that predicted certainty about "whether the U.S. government will legalize

gay marriage at the state level" was greater among participants in the positive-ruling condition ($M = 2.49$, 95% confidence interval, $CI = [2.38, 2.60]$) than among participants in the negative-ruling condition ($M = 1.03$, 95% $CI = [0.87, 1.18]$), $t(1671) = 15.44$, $p < .001$.

As we predicted, participants in the positive-ruling condition perceived the status quo norms regarding Americans' current support for gay marriage to be significantly higher ($M = 0.96$, 95% $CI = [0.84, 1.07]$) than did participants in the negative-ruling condition ($M = 0.71$, 95% $CI = [0.60, 0.83]$), $t(1671) = 2.95$, $p = .003$, $d = 0.14$ (see Fig. 1). Participants in the positive-ruling condition also projected significantly greater increases in American's support for gay marriage (perceived directional norms; $M = 7.16$, 95% $CI = [7.06, 7.26]$), compared with participants in the negative-ruling condition ($M = 6.78$, 95% $CI = [6.68, 6.88]$), $t(1671) = 5.23$, $p < .001$, $d = 0.26$ (see Fig. 1).

Less expected, given our prediction that attitudes were less likely to change, we observed that attitudes in support of gay marriage were significantly more positive among participants in the positive-ruling condition ($M = 2.21$, 95% $CI = [2.03, 2.39]$) than among participants in the negative-ruling condition ($M = 1.78$, 95% $CI = [1.59, 1.97]$), $t(1671) = 3.28$, $p = .001$, $d = 0.16$ (Fig. 1). The same pattern was observed for ratings of gay people on a feeling thermometer (positive-ruling condition: $M = 78.64$, 95% $CI = [77.02, 80.26]$; negative-ruling condition: $M = 75.78$, 95% $CI = [74.07, 77.48]$), $t(1671) = 2.39$, $p = .017$, $d = 0.12$ (Fig. 1).

The behavior we measured (selecting a free pro-gay-marriage sticker as opposed to other free issue stickers or no sticker) differed between conditions in the predicted direction but not significantly, an effect that we hypothesized to be less likely than social norm change. Only 17.9% of our sample selected any sticker at all, and 7.9% (66 out of 837) of all participants in the negative-ruling condition selected a pro-gay-marriage sticker, compared with 10.3% (86 out of 836) in the positive-ruling condition, $b = 0.29$, 95% $CI = [-0.40, 0.63]$, $p = .088$. Participants in the positive-ruling condition (20.3%) were more likely to take any sticker, regardless of sticker content, compared with participants in the negative-ruling condition (15.5%), $b = 0.33$, 95% $CI = [0.08, 0.58]$, $p = .011$. Keeping in mind that the behavioral difference was not robust, we found that perceived directional norms correlated with the experimental difference in behavior, which suggests that they play a role in behavioral response (see Section G in the Supplemental Material).

In contrast to our expectations, our findings were not moderated by participants' political orientation. One exception was that the increase in positive feelings toward gay people was stronger among more conservative participants (see Table S13 in the Supplemental

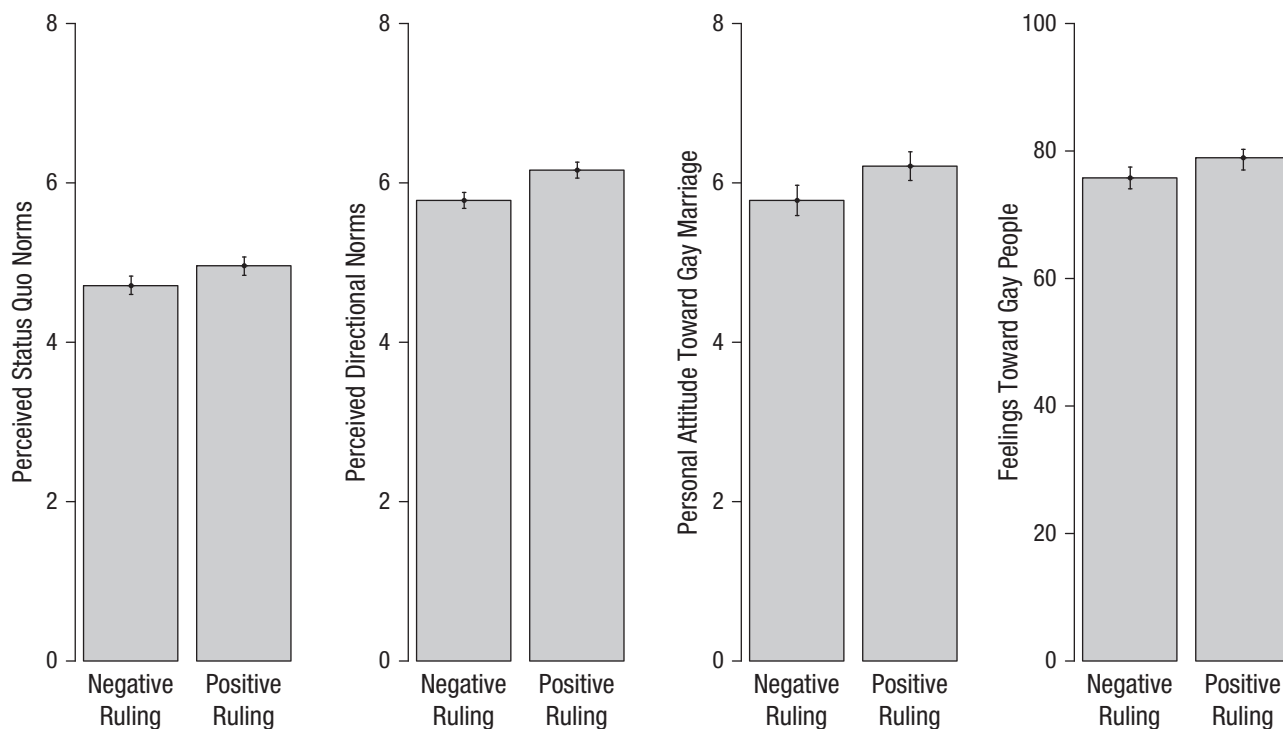


Fig. 1. Results from Study 1a: mean ratings of perceptions of status quo norms, perceptions of the direction and speed of social change in support of gay marriage, personal attitudes toward gay marriage, and feelings toward gay people. Ratings are shown as a function of Supreme Court–ruling condition. The first three measures were rescaled for ease of comparison. Error bars show 95% confidence intervals.

Material). We found evidence of a stronger effect of the anticipated Supreme Court decision among participants who reported more trust in the Court and belief in its representativeness of public opinion in the United States (Table S13). A limitation is that perceptions of the Supreme Court were measured at the end of the study and were affected by the manipulation (see Table S4 in the Supplemental Material). The study manipulated perceptions of the Supreme Court decision without the accompanying real-world influences of media and peer reactions. Participants in both conditions imagined a variety of reactions, and imagined media reactions did not account for the effect of the manipulation on norms or attitudes (see Sections F and H in the Supplemental Material). Thus, our small but statistically significant effects of a positive Supreme Court ruling for legalized gay marriage on social norms perception support the hypothesis that perceived social norms can change in response to the likelihood of the institutional decision itself.

The fact that participants imagined negative and mixed reactions to both positive and negative rulings also suggests that they were not trying to please the experimenters, although this possibility cannot be ruled out. However well-controlled, these types of contrived

survey experiments may induce participants to personally engage with and understand an institutional decision to an extent that they otherwise might not (Egan & Citrin, 2011; Unger, 2008) and can serve only as an approximation of a real-world event. For this reason, we conducted a prospective longitudinal study of the actual Supreme Court decision on gay marriage, to capture any changes in attitudes and perceived norms.

Study 1b

Method

In a five-wave time-series study that followed the same individuals prior to and following the June 2015 U.S. Supreme Court ruling on same-sex marriage, we tested whether the ruling corresponded with a positive shift in perceived social norms and attitudes in support of gay marriage and of gay people. We also collected a separate between-subjects replication data set.

Participants. Participants (43.3% female, 56.7% male; mean age = 33.93 years) were recruited online via Amazon Mechanical Turk for the within-subjects longitudinal component of the study. The final sample consisted of

Table 1. Dates of Longitudinal Survey Waves Surrounding the Announcement of the Supreme Court Ruling on Gay Marriage (Study 1b)

Wave	Launch date	End date
Before announcement of Supreme Court ruling		
1	March 10, 2015	May 28, 2015
2	June 10, 2015	June 14, 2015
3	June 22, 2015	June 24, 2015
After announcement of Supreme Court ruling		
4	June 27, 2015	July 3, 2015
5	July 18, 2015	July 23, 2015

Note: The Supreme Court ruling was announced at 10:00 a.m. on June 26, 2015.

1,063 participants after the exclusion of 269 participants who failed attention checks. As in Study 1a, participants were retained in the sample if they were U.S. citizens, did not indicate an LGBTQIA identity, and passed a series of attention checks. Including participants who did not pass attention checks does not change any of the study's results. The recruited sample size was determined by the power analysis in Study 1a and through additional consideration of the repeated measures design and of attrition rates in a study with similar follow-up methods also conducted on Mechanical Turk (Christenson & Glick, 2013). On average, these participants reported consuming mass media news about 3 to 4 times per week, with a 57% majority reporting daily consumption, which suggests that few participants were unaware of the ruling. For the between-subjects time-series data collection, an additional 545 adult participants (45.5% female, 54.5% male; mean age = 32.36 years) were recruited in total across Waves 2 through 5 of data collection (an additional 131 participants were excluded for failing attention checks). This resulted in a combined sample of 1,608 participants in the between-subjects data set.

Within-subjects time-series procedure. Participants for the within-subjects portion of the study were recruited to complete an initial survey (Wave 1) on Amazon Mechanical Turk via an invitation that was posted on the Web site each Wednesday from March 10 to May 28, 2015. The timing of this initial recruitment phase and all subsequent measurement waves was based on the expectation that the Supreme Court ruling would be issued in late June. All participants who were retained in the Wave 1 survey were subsequently invited by e-mail to participate in the two other surveys prior to the ruling (Waves 2 and 3) and the two surveys following the June 26 ruling (Waves 4 and 5; see Table 1 for dates). To maximize participant retention in the two post-ruling data collections, we sent two identical invitation e-mails on separate days for Waves 4 and 5; otherwise, each invitation to participate in a follow-up wave

was identical (a recruitment strategy adapted from Christenson & Glick, 2013; see Section H in the Supplemental Material). Participants were compensated 30¢ at Wave 1 and 50¢ at each follow-up wave, with a \$1 bonus for completing all waves.

Our rate of retention across Waves 2 through 5 was on average 54.4% of all respondents, a rate comparable with that of other longitudinal time-series studies conducted on Amazon Mechanical Turk (Christenson & Glick, 2013). In Waves 2 through 5, responses were retained if the participant passed that wave's respective single attention-check question. In Wave 5, about 12.3% of the sample guessed the general purpose of the study as it related to the Supreme Court ruling. Their responses are included in all our reported findings; excluding their responses does not affect our results.

Between-subjects time-series procedure. After the conclusion of Wave 1 of the longitudinal component on May 28, 2015, we issued an invitation each Wednesday for a new set of participants to complete the survey, recruiting new respondents weekly through July 22, 2015. The survey was identical to the Wave 1 survey given to the within-subjects sample. This additional sample, combined with respondents from Wave 1 of the within-subjects portion of the study, formed a time-series data set in which new participants were surveyed each week from March 10 through July 22, 2015. We collected this cross-sectional data set to eliminate suspicions about the research hypotheses within one set of respondents and to test whether the effects would be replicated in a repeated panel sample.

Survey items. Participants responded to the same dependent measures as in Study 1a. In the within-subjects data set, the behavioral measure was not repeated in follow-up waves.

Results

Across several specifications that accounted for survey attrition in different ways, we found robust evidence that the Supreme Court ruling was associated with a significant shift in perceived (present and future) social norms in support of gay marriage. We did not find evidence of change in personal attitudes toward gay marriage or in ratings of gay people. This pattern emerged when comparing the survey waves measured immediately before and after the ruling, when implementing a regression-discontinuity design to account for trends over time, when incorporating inverse-probability weighting to address attrition, and when analyzing the separate cross-sectional sample.

First, using paired-samples *t* tests to compare the responses of all participants who completed both the survey wave conducted several days prior to the ruling

(Wave 3) and the wave launched the day after the ruling (Wave 4), we found that perceptions of Americans' current support for gay marriage (perceived status quo norms) were significantly greater in Wave 4 ($M = 1.76$, 95% CI = [1.62, 1.90]) compared with Wave 3 ($M = 1.09$, 95% CI = [0.95, 1.23]), $t(453) = 12.34$, $p < .001$, $d = 0.58$. Perceptions that support for gay marriage in the United States is increasing (perceived directional norms) were significantly greater in Wave 4 ($M = 7.74$, 95% CI = [7.61, 7.87]) compared with Wave 3 ($M = 7.03$, 95% CI = [6.89, 7.17]), $t(453) = 13.07$, $p < .001$, $d = 0.61$. However, attitudes toward gay marriage did not differ significantly in Wave 4 ($M = 1.93$, 95% CI = [1.67, 2.19]) compared with Wave 3 ($M = 1.96$, 95% CI = [1.71, 2.21]), $t(453) = -0.70$, $p > .250$, nor did ratings of gay people on the feeling thermometer (Wave 4: $M = 72.46$, 95% CI = [69.98, 74.93]; Wave 3: $M = 71.75$, 95% CI = [69.40, 74.11]), $t(453) = 1.81$, $p = .071$ (see Table S1 in the Supplemental Material).

Because it is possible that the differences in perceived norms between Waves 3 and 4 are explainable by a larger trend over time, unrelated to the Supreme Court decision, we next fitted all five waves of data to regression models that estimated the size of the discontinuity around the Supreme Court decision (Fig. 2). For each outcome measure, we estimated a series of linear regression-discontinuity models analyzing completed survey responses clustered by subject with robust standard errors. In the models, we included the effect of the Supreme Court ruling (0 = preruling responses, 1 = postruling responses), the number of days between the time of the ruling and the time of individual survey completion (postruling surveys received positive values, preruling responses received negative values), and the interaction between these two variables (see Tables S7–S10 in the Supplemental Material; see also Fig. S1 in the Supplemental Material for a nonparametric model fit). The results were consistent with those of the paired-samples t tests. The ruling had a positive effect on perceived status quo norms in support of gay marriage, $b = 0.77$, 95% CI = [0.65, 0.89], $p < .001$, and on perceived directional norms in support of gay marriage, $b = 0.77$, 95% CI = [0.66, 0.88], $p < .001$. The ruling did not have an effect on personal attitudes toward gay marriage, $b = 0.03$, 95% CI = [-0.11, 0.18], $p > .250$, or on the feeling thermometer, $b = -0.87$, 95% CI = [-2.25, 0.51], $p = .215$ (see Table S3 in the Supplemental Material).

Our results were also substantively unchanged when we used inverse-probability weighting of participant responses, a strategy that directly estimated the average characteristics of individuals who were likely to drop out of the survey on the basis of their baseline covariate values and gave greater weight to the responses of participants who shared characteristics with those who

dropped out (Horvitz & Thompson, 1952; see Table S3). We repeated this strategy using Wave 1 and Wave 2 as the basis for estimating attrition, with and without covariates and with and without case-wise deletion (i.e., only those participants who responded to all five waves). All specifications were consistent with our finding that perceived norms changed in response to the ruling and that attitudes and feelings toward gay marriage and toward gay people did not.

We did not find that these effects were moderated by respondents' reported trust in the Supreme Court, belief that the Court represents public opinion, or frequency of media consumption (see Section F in the Supplemental Material). As in Study 1a, the effects did not differ by the respondents' political orientation, again with the exception that conservatives' feelings toward gay people followed a different pattern than liberals' feelings in reaction to the ruling. Here, however, conservatives rated gay people less warmly as a result of the ruling, while liberals' feelings did not change (see Figs. S4 and S5 and Table S14 in the Supplemental Material).

We replicated this pattern of effects for social norms and attitudes in our between-subjects time-series data set (see Table S1). Perceived status quo norms were significantly greater among a new set of participants surveyed the week after the ruling ($M = 1.31$, 95% CI = [0.93, 1.70]) than among a different set of participants surveyed the week before the ruling ($M = 0.66$, 95% CI = [0.21, 1.11]), $t(124) = 2.17$, $p = .032$, $d = 0.38$. This pattern was the same for perceived directional norms in support of gay marriage (after ruling: $M = 7.47$, 95% CI = [7.13, 7.81]; before ruling: $M = 6.91$, 95% CI = [6.56, 7.26]), $t(124) = 2.28$, $p = .024$, $d = 0.41$. Attitudes in support of gay marriage and ratings of gay people each did not differ among the participants surveyed the week after and the week before the ruling. The pattern also held when we conducted a regression-discontinuity analysis on the full data set across 4 months of weekly data collection, and it held up to the same robustness checks (see Table S12 in the Supplemental Material). Participants in this data set were not more likely to select a gay-marriage sticker following the ruling (Table S1).

The effects are unlikely to have been due to experimenter demand. It is unlikely that participants guessed that experimenters were predicting that social norm change would be greater than attitude change. Moreover, we found the same pattern of effects among participants interviewed just once and those who were interviewed repeatedly (which is the most salient clue that we expected change over time).

Thus, our Study 1b longitudinal findings held across multiple specifications and in a separate between-subjects data collection and showed that the Supreme

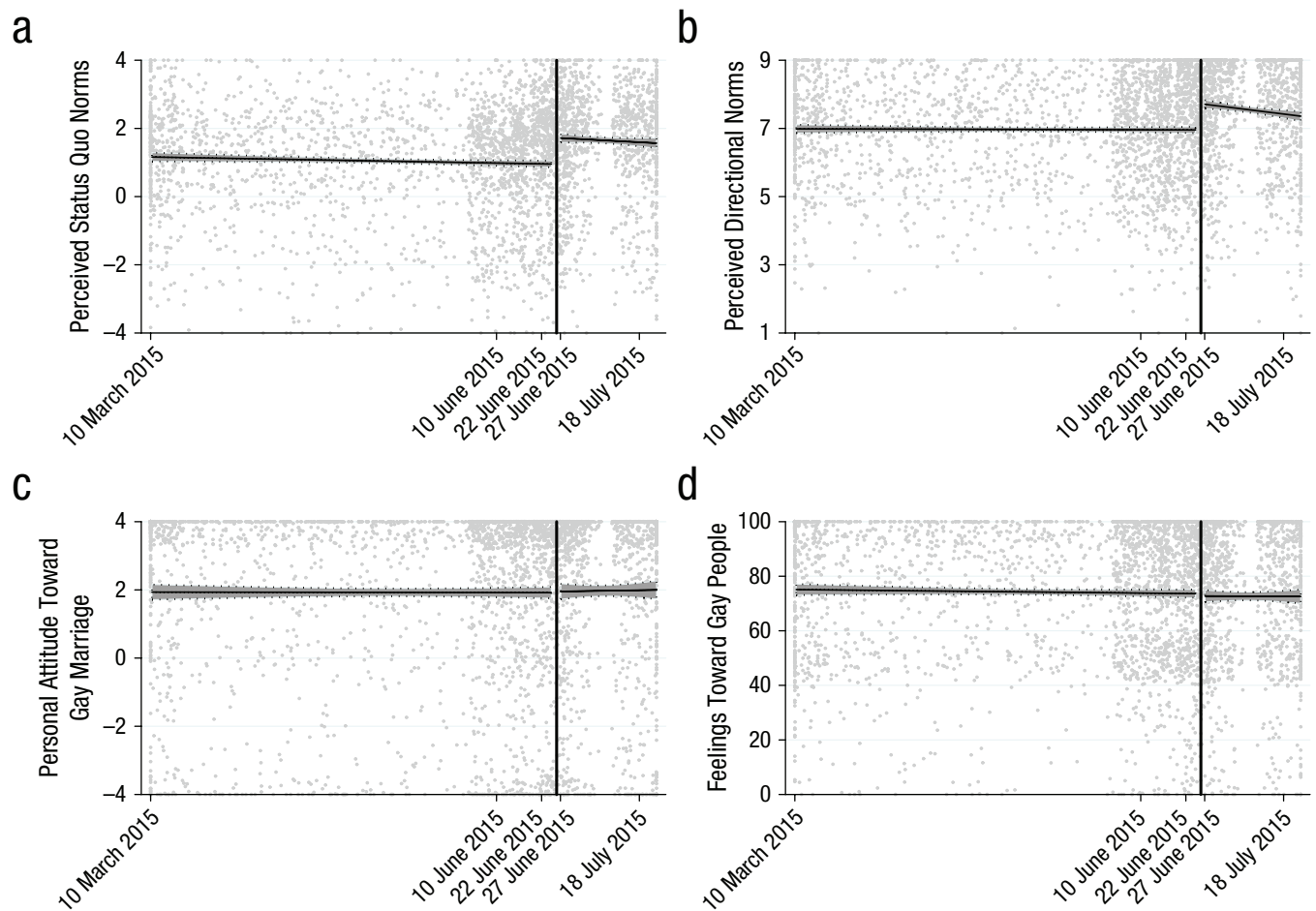


Fig. 2. Results from Study 1b: scatterplots (with best-fitting regression lines) showing the relationship between time and (a) perceptions of status quo norms, (b) perceptions of the direction and speed of social change in support of gay marriage, (c) personal attitudes toward gay marriage, and (d) feelings toward gay people (3,377 repeated measures observations). Separate models were run for the data collection waves before and after the announcement of the Supreme Court ruling on gay marriage (June 26, 2015, 10:00 a.m., indicated by the thick vertical line). Dates along the *x*-axis indicate the beginning of each of the five waves of data collection. The shaded band around each regression line indicates the 95% confidence interval.

Court *Obergefell v. Hodges* ruling was on average associated with a nearly 1-point increase on a 9-point scale (an average Cohen's *d* of 0.60) in perceived norms supporting gay marriage. As a comparison, the impressive rise in support for gay marriage among baby boomers (people born between 1946 and 1964) from the years 2001 to 2015 was an increase from 32% to 45% (a Cohen's *d* of 0.28; Pew Research Center, 2015). Contrary to our previous laboratory evidence in Study 1a, the results of Study 1b did not reveal evidence of a change in personal attitudes toward gay marriage or ratings of gay people following the Court ruling. Taking the two studies together, we found strong evidence that an institutional decision can change people's social norm perceptions—perceptions of what the public believes and what the public will believe in the future.

Discussion

The two studies reported here suggest that institutions can shift public perceptions of social norms: specifically, perceptions of Americans' current and future support for gay marriage. In a controlled experimental context, we found evidence that the June 2015 Supreme Court ruling on same-sex marriage shifted non-LGBTQIA Americans' perceived social norms in support of gay marriage (Study 1a). A prospective time-series study further showed that the actual Supreme Court ruling in favor of same-sex marriage was indeed associated with an increase in perceived social norms in support of gay marriage (Study 1b). Our research found that, unlike perceived norms, personal attitudes and feelings toward gay marriage and gay people did not

reliably shift in the wake of the ruling, particularly when measured in real-time response to the actual Supreme Court decision.

These changes in perceived social norms matter because they represent shifts in individuals' understanding of their society—where it stands and where it is going. From a behavioral perspective, this kind of understanding matters because individuals often use their perceptions of what is common or accepted in a collective as a guide for their own behavior (Cialdini & Goldstein, 2004; Tankard & Paluck, 2016). In the present research, we were not able to track important behaviors that these perceived norms might influence, such as interactions with the LGBTQIA community or public expression of support for gay marriage. These behaviors are an important extension for future investigation. Additionally, in previous research, shifts in perceived norms have encouraged shifts in personal attitudes (Stangor et al., 2001). Longitudinal research that extends beyond our 5-month period could also test this possibility.

Directional norms that describe what a collective will think or do in the future may capture a perception of momentum toward a new idea, which analysts have described as an important component of social change (Luks & Salamone, 2008). Perceiving a directional norm, such as that American support for gay marriage is on the rise, might otherwise be described as the perception that support for gay marriage is on the right side of history. The present research suggests that institutional decisions may themselves influence this perception of momentum, at least in some cases.

Only in Study 1a (a survey experiment) did we find support for a relationship between institutional decisions and personal attitudes. We know from previous work that institutions cannot always influence attitudes (e.g., Bartels & Mutz, 2009; Clawson et al., 2001; Hoekstra, 1995). Because gay marriage is an issue on which individual attitudes are tied to moral instinct (e.g., Powell et al., 2015), institutional decisions may be less likely to prompt the deliberation that often precedes attitude change (Bartels & Mutz, 2009). Additionally, the differences are myriad between a survey experiment and the real world, where the decision was actually issued. It was more difficult in Study 1a than in Study 1b to rule out the possibility that participants were aware of the research hypotheses. Another notable difference is that in Study 1a, participants were asked to imagine their personal experience after the decision was announced (in Study 1b, the Supreme Court was never mentioned while norms and attitudes were measured). This personalization of the institutional decision is one common denominator of previous

studies that found that attitudes were influenced by institutional decisions (e.g., Beaman et al., 2012; Hoekstra, 2000). Increasing the personal relevance of an institutional decision, either by emphasizing its local relevance or by prompting more personalized thought about it, may increase its influence on attitudes. Previous research has identified a tenuous connection between attitudes and social norms in which they do not reliably correlate or change together (e.g., Paluck & Shepherd, 2012). In these studies, we can emphasize only the robustness of our findings for shifts in perceived social norms, which held up when three methods of data collections were used: experimental, longitudinal, and cross-sectional methods.

It is striking that the Supreme Court decision affected perceived norms similarly for liberals and conservatives in these studies. The lack of moderation by ideology suggests a reduced role of the media, given differences in media consumption by liberals and conservatives (Prior, 2013) and the very likely differing portrayals of the Court's decision by the liberal and conservative media. We also did not find any moderation of our effects according to respondents' trust in the Supreme Court or belief that it represents the public. However, we expect that if a highly untrusted, undemocratic, or illegitimate institution were the source of a decision, it would be less effective in shifting perceived social norms (Tankard & Paluck, 2016). Accumulating studies that exploit variation across institutions, not just variation in individuals' personal attitudes toward the same institution, will advance this research question. Future work can also assess how much movement in perceived norms is due to the mass media attention that accompanies an institutional decision. Our present results were not explained by participants' imagined media responses or regular media consumption. For now, these findings represent the first experimental evidence that institutional decisions can affect norm perception, or perception of collective opinion.

Action Editor

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Author Contributions

M. E. Tankard and E. L. Paluck designed the studies. M. E. Tankard collected, analyzed, and interpreted the data under the supervision of E. L. Paluck. Both of the authors drafted and approved the final version of the manuscript.

Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

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Open Practices



All data and materials have been made publicly available via the Open Science Framework and can be accessed at <https://osf.io/q4n2b/>. The design, analysis plans, and other materials for the studies were preregistered at the Open Science Framework and can be accessed at <https://osf.io/q4n2b/>. The complete Open Practices Disclosure for this article can be found at <http://journals.sagepub.com/doi/suppl/10.1177/0956797617709594>. This article has received badges for Open Data, Open Materials, and Preregistration. More information about the Open Practices badges can be found at <http://www.psychologicalscience.org/publications/badges>.

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