Sociology Faculty Articles and Research

Sociology

3-1-2021

Attitudinal Change, Cohort Replacement, and the Liberalization of Attitudes about Same-sex Relationships, 1973–2018

Ashley Wendell Kranjac
Chapman University, kranjac@chapman.edu

Robert L. Wagmiller
University of Albany

Recommended Citation

Attitudinal Change, Cohort Replacement, and the Liberalization of Attitudes about Same-sex Relationships, 1973–2018

Comments

Copyright

Attitudinal Change, Cohort Replacement, and the Liberalization of Attitudes about Same-Sex Relationships, 1973-2018

INTRODUCTION

Public opinion has liberalized considerably toward same-sex relationships in the United States since the late 1980s both because more recent birth cohorts are more accepting of same-sex relationships than earlier cohorts and because members of all cohorts are more accepting of such relationships today than in the past (Baunach 2011). Overall, within-cohort attitudinal change has been a much more important driver of change in public opinion rather than cohort succession, a pattern replicated across age, sex, residential, educational, and religious groups (Loftus 2001; Treas 2002; Baunach 2011; Adamzcyk 2017). Baunach (2011) and others (Brewer 2002; Treas 2002; Andersen and Fetner 2008; Garretson 2019) speculate that individual attitudes toward same-sex relationships and marriage have liberalized over time because of changes in the framing of same-sex marriage in the media, public debates, and state and federal legislation as well as the increased presence of lesbian and gay individuals in public and social life. Scholars point to key historical events, such as President Bill Clinton's "Don't Ask, Don't Tell" policy of 1993 and Ellen DeGeneres famously coming out as a lesbian in 1997, as further incremental progress in changing public perceptions of lesbian and gay individuals (Butler 1998). However, no studies to date have disaggregated change over time to see whether intra- or inter-cohort attitudinal change has strengthened over this time period as the framing of the debate shifted, the public and social presence of lesbian and gay individuals increased, and the legal status of same-sex unions changed. Consequently, the answers to important questions about the cohort processes generating the unprecedented increase in acceptance of same-sex relationships and marriage remain unknown. For example, did attitudinal change accelerate after these shifts sparked a national debate about marriage equality? If so, how did the intra- and inter-cohort mechanisms fostering attitudinal liberalization evolve after this occurred? Did individual change or cohort succession processes strengthen more as the framing of the debate shifted and as more people came into contact with lesbian and gay individuals in the aftermath? Did the processes of attitudinal change within- and between- cohorts accelerate or shift after states started to legalize same-sex unions?

Building on previous studies decomposing change in attitudes about same-sex relationships, we examine how the social processes that foster change in attitudes about same-sex relationships

differ for three relevant periods. We examine (1) the period prior to the rapid increase in attitude liberalization toward same-sex marriage rights (1973-1991), (2) the period of contentious debate, important progress and setbacks in lesbian and gay rights (1991-2002), and (3) the period of gradual legislative and judicial liberalization at the state and federal levels initiated by Massachusetts becoming the first state to legalize same-sex marriage and culminating in the Supreme Court decision in *Obergefell* (2015) requiring all states to grant same-sex marriages (2002-2018). We investigate the nature and pace of change in attitudes about same-sex relationships through a decomposition analysis. We draw on the longstanding demographic traditions of Norman Ryder (1965) to partition total change into that resulting from the mechanism of cohort replacement (i.e., the replacement of older cohorts with lower acceptance of same-sex relationships by new cohorts with higher rates of acceptance) and that resulting from the mechanism of intracohort change (i.e., increasing rates of tolerance occur within cohorts over time as a result of individual change; Firebaugh 1989).

Population Processes and the Liberalization of Attitudes about Same-sex Relationships

Attitudinal change can arise from two competing processes. Attitudes can liberalize because new cohorts with more liberal views replace older cohorts with more conservative beliefs. Alternatively, attitudes can liberalize because individuals change their views. The relative prominence of these two mechanisms influence the overall direction and pace of change. Shifting attitudes motivated primarily by cohort replacement will lead to gradual change, with change concentrated among more recent birth cohorts. Change resulting mainly from intracohort processes occurs more quickly, with the potential to transform attitudes over short periods and for a broader segment of the population. Cohort replacement and intracohort change mechanisms can accelerate the pace of change when they reinforce one another (i.e., their effects are in the same direction), and lessen the pace of change when they counteract one another (i.e., their effects are in opposite directions).

Studies of change in attitudes about same-sex relationships and same-sex marriage that do not differentiate between these important mechanisms of social change find that newer cohorts are more accepting of same-sex relationships than past cohorts, and that cohorts have become more tolerant over time (Andersen and Fetner 2008; Baunach 2011; Sherkat et al. 2011; Treas 2002).

There are, however, several reasons to expect that the period of intense cultural wars that sparked litigation, public debate, and legislation has both accelerated the pace of change and reshaped the relative prominence of cohort replacement and intracohort change processes. Indeed, Kiley and Vaisey (2020) recently leveraged 2006 to 2014 General Social Survey data to model shifts in attitude, and uncovered that most attitudinal change is due to cohort turnover. Yet, attitudes toward gays and lesbians are an important exception to this trend.

First, the reframing of the public debate about lesbian and gay rights in the post-liberalizing era around issues of secular rights and civil liberties rather than religion and morality may have fostered greater individual change. Experimental studies indicate that appeals challenging the idea of lesbian and gay rights as an inherently religious issue lead to greater acceptance of marriage rights for lesbians and gays (Ghoshal 2009), in part, because acceptance of the framing of lesbian and gay rights as civil rights and liberties allows individuals to decouple their personal religious views from secular politics (Andersson et al. 2013; Adamczyk 2017). Consistent with this experimental evidence, religious leaders in some churches have softened their views of same-sex relationships (Cragun, Williams, and Sumerau 2015), and evangelicals and conservative Christians have become more supportive of same-sex marriage and tolerant of gays and lesbians (Farrell 2011; Schnabel 2016) as the debate was reframed around issues of individual rights and equality.

Second, the presence of lesbian and gay individuals in social and public life has increased dramatically in the post-liberalizing era. A growing number of celebrities, business leaders, athletes, and politicians have announced voluntarily that they are proud members of the lesbian and gay community and discussed publicly their experiences living as lesbian and gay individuals. Lesbian and gay characters are increasingly included, and play prominent roles, in high profile television shows and movies. The share of the U.S. population with friends, relatives, or coworkers that are openly members of the lesbian and gay community has also increased dramatically in the post-change period (Gallup News 2017). Researchers find that greater interpersonal exposure to lesbian and gay individuals is associated with increased rates of acceptance (Altemeyer 2001; Eldridge et al. 2006; Heinze and Horn, 2009; Garretson 2015; Garretson 2019).

Third, the legalization of same-sex marriage in states such as Massachusetts may have accelerated the liberalization of attitudes about same-sex attraction because it marked a new societal

norm stigmatizing anti-gay beliefs. People in places that have legalized same-sex marriage express greater acceptance of same-sex attraction, in part, because legalization leads to more tolerant attitudes toward gays and lesbians (Flores and Barclay 2015; Slenders, Sieber, and Verbakel 2014; Doan, Miller, and Loehr 2015) and greater personal knowledge about the issues surrounding lesbian and gay rights (Becker and Scheufele 2011). Still, change in attitudes toward same-sex relationships and marriage is bidirectional. Osofu et al. (2018), for example, found a "backlash" effect wherein some residents of states where local same-sex marriage legislation failed to pass, anti-gay sentiment actually increased with federal legalization.

Present Study

The liberalization of Americans' attitudes toward same-sex relationships and marriage can only be understood by situating attitudinal change in the broader social, cultural, political, and legal contexts in which individuals formed, reconsidered, and modified their beliefs (Adamczyk and Pitt 2009). Since the 1980s, the mainstream media (Sherkat et al. 2011; Ayoub 2017) and higher educational institutions (Ohlander, Batalova, and Treas 2005) have helped to garner support for lesbian and gay rights by constructing a climate of tolerance. This positive framing by key institutional powers coupled with activism and basic legislative changes such as the judicial repeal of anti-sodomy legislation by the Supreme Court in Lawrence v. Texas (Kane 2003) and the passage of anti-discrimination laws (Wald, Button, and Rienzo 1996) facilitated greater social acceptance toward gays and lesbians, particularly among younger cohorts (Adamczyk and Pitt 2009). However, deep political divisions do remain between those that support granting core civil rights and liberties to couples of the same sex, including the legality of marriage, and those that oppose these civil rights and liberties (Keleher and Smith 2008; Sherkat et al. 2011).

We examine the cohort mechanisms generating change in attitudes toward same-sex relationships during three distinctive social, cultural, legal, and legislative periods. First, we decompose change during the period prior to the liberalization of American attitudes, a time that predates the same-sex marriage debate and during which same-sex attraction was framed primarily in terms of religious and moral beliefs (Olson, Cadge, and Harrison 2006), with few individuals in public and social life coming out as lesbian and gay. Second, we examine the mechanisms of change

during a contentious period of important progress and setbacks in the debate about same-sex marriage and lesbian and gay rights. This period was a time of intense conflict between the proponents and opponents of same-sex unions over the framing of the same-sex marriage debate, the legal definition of marriage, and legislation extending marriage and partnership benefits to same-sex couples (Soule 2004). It was during this period that debates about same-sex relationships and marriage became a central axis in the culture wars (Butler 1998), and that "out" lesbian and gay individuals became more prominent in social and public life (Gallup News 2017; Garretson 2019). Our final study period extends from Massachusetts' and other states' legalization of same-sex unions to 2018. During this period, the same-sex marriage debates increasingly came to be framed by the media, and viewed by the public, in terms of equality and civil rights and liberties (Brewer 2003; Smith 2005). This period precedes the Supreme Court's *Obergefell v. Hodges* decision legalizing same-sex marriage. It is important to note, however, that any cut points chosen for analysis are arbitrary given the complex and dynamic social processes involved in shifting public opinions (e.g., see Rosenfeld 2017). We examine these distinct time points not to isolate the specific causes of change in attitudes (e.g., changes in debate framing and social contact), but rather to capture how the processes generating change morphed as the social, cultural, political, and legislative climate evolved between these critical periods in time.

Prior to the rapid increase in liberalizing attitudes, public opinion about same-sex relationships was largely unchanged from the 1970s and 1980s (Yang 1997; Brewer and Wilcox 2005). However, this does not necessarily mean that the underlying mechanisms of change in public opinion had not begun to shift. Studies of attitudes in the period prior to the rapid increase in attitude liberalization toward same-sex marriage rights suggest that cross-cohort differences in attitudes about same-sex relationships may have emerged during this period. For example, Sherkat et al. (2011) found that Americans born prior to 1940 have the most conservative attitudes toward same-sex couples and unions. In the early 1990s, the members of these older cohorts strongly opposed same-sex relationships and marriage (Masci 2008; Andersen and Fetner 2008; Keleher and Smith 2008). In contrast to these older cohorts, members of more recent cohorts tended to be more supportive of same-sex civil rights during this period (Lewis and Gossett 2008; Becker and Scheufele 2011). These initial signs of a shift in public opinion may, however, be offset by negative intracohort change

reflecting the fact that during this period age was negatively related to attitudes about same-sex relationships (Brumbaugh et al. 2008; Becker 2012).

Thus, we expect that:

1: Prior to the rapid increase in attitude liberalization toward same-sex marriage rights, change will be gradual and concentrated among more recent cohorts as more tolerant younger cohorts replace older and less tolerant cohorts.

Beginning in the late 1990s and early 2000s, attitudes toward lesbian and gay individuals underwent a dramatic shift (Brewer 2003). Keleher and Smith (2008) found that every cohort born after 1947 had significantly more accepting attitudes than the previous cohort. Several factors may have contributed to this shift. First, the framing of the public debate about lesbian and gay rights shifted to a focus on civil rights and equality rather than religion and morality (Miceli 2005; Nichol and Smith 2008). Second, people's interpersonal exposure to "out" lesbian and gay individuals increased dramatically (Gallup News 2017; Garretson 2019) and lesbian and gay characters became more prominent on popular television shows like *Roseanne* and *Friends* and more lesbian and gay celebrities came "out" (Butler 1998). Third, legalization of same-sex unions and marriages shifted Americans' perceptions of lesbian and gay relationships and individuals. Given the drastic change in public opinion after this period, we anticipate that cohort replacement and intracohort change reinforced one another to create swift and broad changes in attitudes in the population.

Thus, we further expect that:

2: After the initiation of attitudinal change and during the period of contentious debates leading to both important progress and backtracking (e.g, the Don't Ask, Don't Tell policy and the Defense of Marriage Act) in lesbian and gay rights (1991-2002), change in attitudes will largely be the product of increasingly strong, positive, and reinforcing intracohort change and cohort replacement effects.

Recent evidence indicates that the legalization of marriage equality fosters greater acceptance of lesbian and gay individuals and same-sex unions. Brewer and Wilcox (2005) found that a sizable proportion of Americans favored nondiscriminatory protections and equal rights for couples of the same-sex just a few years after Massachusetts' legalization of same-sex marriage. Flores and Barclay (2015) reported that the attitudes of residents of states legalizing same-sex unions or marriages were much more likely to liberalize than to become more conservative after the policy change. Therefore, intracohort change effects may have strengthened, both absolutely and relatively to cohort succession effects, after Massachusetts initiated the legalization of same-sex unions at the state-level.

Finally, we expect that:

3: During the period of legislative and judicial progress begun by Massachusetts' and other states' legalization of same-sex unions and culminating with the Supreme Court's decision in *Obergefell*, the liberalization of attitudes will accelerate because intracohort change effects increase, both absolutely and relatively to cohort replacement effects.

DATA AND METHODS

Data and Measures

We use data from the 1973 to 2018 General Social Surveys (GSS). The GSS is an equal-probability multi-stage clustered sample of housing units for the United States. The sample is representative of the non-institutionalized U.S. population aged eighteen and older. The survey was administered every year prior to 1994 ($\bar{n} \cong 1,500$), and every other year thereafter ($\bar{n} \cong 3,000$). Response rates (AAPOR Response Rate 5) for the GSS range from a low of 61.3 percent in 2016 to a high of 82.4 percent in 1993, with an average response rate of about 75 percent (NORC 2016). The acceptance of same-sex relationships item used as the outcome measure in this study was not asked in 1975, 1978, 1979, 1981, 1983, 1986, and 1992 so these survey waves were excluded from the analysis.

Missing data rates for the variables used in this study are low, ranging from less than 1% for age to a little over 5% for the acceptance of same-sex relationships measure. As such, we opted to

forgo imputation of missing values. The final sample size is 39,772. All analyses employed the GSS sampling weights that adjust for unequal probabilities of selection that result from differences in household sizes.

The dependent variable in this study is the person's response to the question "What [do you think] about sexual relations between two adults of the same sex?" Response categories included "Always Wrong," "Almost Always Wrong," "Sometimes Wrong," and "Not Wrong at All." We created a dichotomized outcome measure from the original item, where 1 = "Not Wrong at All" and 0 = "Sometimes," "Almost Always," or "Always Wrong." We dichotomized the same-sex relationships variable because our primary interest is in change in full acceptance of such relationships relative to any expression of intolerance. As a robustness check, we also ran supplemental analyses that used the original GSS variable's response categories as the outcome measure. These results are presented in a supplemental table. We examine change in attitudes toward same-sex sexual relationships rather than same-sex marriage because one of our principal goals in this study is to compare the mechanisms of change in the pre- and post- liberalizing periods, and the GSS did not begin to ask respondents about their opinions of same-sex marriage until the late 1980s. The independent variables in the analysis are the respondent's year of birth (i.e., cohort) and the survey year. Birth year ranged from 1884 to 1996. We do not include additional covariates because our interest is in exploring how the direction and relative strength of inter- and intra-cohort change mechanisms evolved over our focal periods. Our goal is not to examine the extent to which changes in the demographic composition, social and economic wellbeing, religiosity, and the liberalization of other attitudes in the population over time account for these mechanisms. Still, as an additional robustness check, we ran a series of conditional models that control for changes over time in population composition in the U.S. over this period in terms of race and ethnicity, family structure, geographical region, education, political views, and religious attendance. We note divergences between these results and estimates presented here in the results section.

Analytic Techniques

For this study, we decomposed total social change (SC) into the acceptance of same-sex relationships into change motivated by between-cohort processes (i.e., cohort replacement or CR)

and that motivated by within-cohort processes (i.e., intracohort change or IC) using Glen Firebaugh's (1989) linear decomposition method. Although other regression-based methods of decomposition exist (e.g., survey metric analysis, regression standardization), a linear decomposition method uses the most information to estimate cohort effects by measuring birth year linearly rather than collapsing it into coarser cohort categories (Firebaugh 1989). These regression-based methods have been criticized for their dependence on the length of time covered in the period of analysis (Glenn 2005), but we addressed these concerns by breaking our period of analysis into shorter time periods and conducting decompositions both for the entire period as well as the shorter periods. The age-period-cohort problem is not resolved by this linear decomposition. Although it is a useful method of decomposition, the cohort replacement component combines cohort and age effects while the intra-cohort component combines period and age effects (Kalleberg and Marsden 2013).

Change was decomposed over the entire period (1973-2018) and separately for the following periods: (1) the period prior to the rapid increase in attitude liberalization toward same-sex marriage rights (1973-1991), (2) the period of contentious debate about same-sex marriage and lesbian and gay rights (1991-2002), and (3) the period of legislative and judicial liberalization at the state and federal levels initiated by Massachusetts becoming the first state to legalize same-sex marriage and culminating in the Supreme Court decision in *Obergefell* (2015) requiring all states to grant same-sex marriages (2002-2018).

Using the linear decomposition approach, we estimate cohort and period differences in attitudes about same-sex relationships by regressing the dichotomous indicator of acceptance of same-sex relationships on birth year and survey year. With this approach, intracohort change is computed by multiplying the regression coefficient for the survey year variable by the length of the study period (i.e., first survey year - last survey year). Cohort replacement is computed by multiplying the regression coefficient for the birth year variable by the difference between the mean birth years for the final and initial survey years. IC indicates how much of the total change in attitudes is attributable to individual change in the acceptance of same-sex attraction, and CR tells us how much of overall change is attributable to population turnover.

We used both ordinary least squares (OLS) and logistic regression to decompose change. We focus on the findings from the OLS models because assessing the overall magnitude of social change

and comparing the extent of change across periods with the logistic results is challenging. Mainly because change between the beginning and end of a period depends not only on the magnitude of change in the percentage that approve of same-sex relationships over the period but also on the percentage of the population that approve of same-sex relationships at the beginning of the study period. By contrast, the OLS results depend only on the extent of change in the percentage that approve of same-sex relationships over the period. The logistic regression results are presented in a separate table, and divergences between these results and the OLS results are noted in the results section. Results from OLS models that used the original GSS variable's response categories as the outcome measure are presented in a supplemental table and noted in the results section.

RESULTS

Historical Trend

Americans' attitudes about same-sex relationships have become much more tolerant over the last forty years. Figure 1 displays the historical trend in acceptance of same-sex relationships between 1973 and 2018. The percentage of the population agreeing with the statement "sexual relations between two adults of the same sex are not wrong at all" increased from 11.8% in 1973 to 58.3% in 2018.

<Figure 1>

Attitudes about same-sex relationships were largely unchanged between 1973 and 1990, with acceptance fluctuating between a low of 11.8% in 1973 and high of 15.8% in 1989. Beginning in the early 1990s, attitudes about same-sex relationships began to liberalize. Between 1990 and 2018, acceptance of same-sex sexual relations rose by over 300%, increasing from 13.6% to 58.3%. Acceptance rose more sharply after 2004 (1.9% per year) than it did between 1990 and 2004 (1.2% per year).

Mechanisms of Change

Why did the acceptance of same-sex relationships increase dramatically after 1990? Table 1 displays results from the linear decomposition of change in attitudes about same-sex relationships over the entire study period and separately for the periods prior to the liberalization of American

attitudes (1973-1991), during the period of contentious debate, important progress and setbacks in lesbian and gay rights (1991-2002), and the period of legislative and judicial liberalization at the state and federal levels initiated by Massachusetts legalizing same-sex marriage and culminating in the Supreme Court decision in *Obergefell* (2002-2018). The table reports the slope coefficients and standard errors for period (columns 1 and 2) and cohort (columns 3 and 4), total social change (SC) (column 5), the total estimated contributions of IC (column 6) and CR (column 8), and the percentage of change attributable to IC (column 7) and CR (column 9). Table 2 displays results for the logistic regression linear decomposition, while supplemental table S1 present results for the OLS decomposition that uses the original, multi-category GSS variable as the outcome measure.

<Table 1>

Consistent with earlier studies examining change in attitudes about same-sex relationships and same-sex marriage (Andersen and Fetner 2008; Baunach 2011; Sherkat et al. 2011; Treas 2002), we find that the liberalization of attitudes since the early 1970s reflects both IC and CR. Between 1973 and 2018, the percentage of the population reporting that same-sex sexual relationships are "not at all wrong" increased by 37.0 percentage points. The liberalization of attitudes over this period is attributable to large, positive, and reinforcing IC (i.e., increasing rates of tolerance occur within cohorts over time as a result of individual change; 27.2) and CR (i.e., the replacement of older cohorts with lower acceptance of same-sex relationships by new cohorts with higher rates of acceptance; 17.4) effects. Although IC and CR both contributed meaningfully to change, IC (57.9%) played a somewhat larger role than CR (37.0%). Results for the logistic regression decomposition (IC=62.0%; CR=45.2%) of this dichotomous measure are similar to those from the OLS model (see Table 2). Results using the multi-category measure of acceptance of same-sex relationships as the outcome suggest a comparatively stronger cohort-replacement effect (IC=52.4%; CR=44.6%); see supplemental table S1).[1]

<Table 2>

---

[1] As an additional robustness check, we ran a series of conditional models that control for changes over time in population composition in the U.S. over this period in terms of race and ethnicity, family structure, geographical region, education, political views, and religious attendance. We find that controlling for compositional changes has a negligible effect on IC change (increasing the estimated effect of IC by 6% for the full period and the 1973-1991 and reducing the estimated effect 7-8% percent in the two later periods). Conversely, adjusting for compositional change significantly reduces the estimated CR effects. The CR effect is reduced by 46% for the full period and by 60-70% for the individual periods.

Examining change over the full period masks major shifts both in the magnitude of change in the acceptance of same-sex relationships and the demographic mechanisms generating this change. Acceptance of same-sex relationships was largely unchanged during the period prior to the large scale attitude liberalization (SC=3.5), with the percentage of the population stating that same-sex relationship are "not wrong at all" increasing by just 3.5 percentage points between 1973 and 1991. However, the relative stability of attitudes during this period conceals the initial seeds of change. Between 1973 and 1991, substantial, positive CR effects (CR=4.8) were offset by similarly sized, negative IC change effects (IC=-4.6). Even during this period of overall stability, newer cohorts with more accepting attitudes about same-sex relationships were replacing older cohorts with less accepting attitudes. Results in Table 2 for the logistic regression decomposition show a similar pattern of offsetting effects (IC=-0.449; CR=0.452), as do those from the decomposition using the multi-category measure of acceptance (Table S1: IC=-0.287; CR=0.204).

By contrast, during the two study periods since the initiation of change and Massachusetts and other states legalized same-sex unions, strong, positive IC and CR effects have reinforced one another. CR effects have increased over time in the linear decomposition (e.g., CR= 4.8 in the 1973-1991 period; CR= 4.9 in the 1991-2002 period; CR= 8.2 in the 2002-2018 period). However, in the other specifications we used to assess robustness, CR effects initially decline then rebound (e.g., logistic decomposition: CR= 0.452 in the 1973-1991 period; CR= 0.284 in the 1991-2002 period; CR= 0.360 in the 2002-2018 period). In all model specifications, CR effects remain significant and positive: with each passing year, each new cohort has more accepting attitudes toward same-sex relationships than the previous cohort.

IC effects have changed even more dramatically over these three periods – with negative IC effects in the period prior to the rapid increase in liberalizing attitudes (IC=-4.6) becoming positive and large in the periods after the initiation of the change and prior to Massachusetts legalizing same-sex unions (IC=9.6) and after Massachusetts legalized these unions (IC=21.0). In the post period, within-cohort change (i.e., individual change) has been the principal driver of change (linear decomposition: 56.8% in the 1991-2002 period and 78.9% in the 2002-2018 period). IC effects strengthened after Massachusetts legalized same-sex civil unions (logistic decomposition: IC= 0.509

in the 1991-2002 period vs. IC= 0.912 in the 2002-2018 period; OLS: IC= 0.351 in the 1991-2002 period vs. IC= 0.594 in the 2002-2018 period).

CONCLUSION

Acceptance of same-sex relationships increased because the mechanisms generating attitudinal change shifted. Consistent with our first expectation, prior to the rapid increase in positive attitudes toward same-sex marriage (i.e., liberalizing) CR effects concentrated change among more recent cohorts as these more tolerant younger cohorts replaced older and less tolerant cohorts. However, during this period these gains were largely offset by negative IC effects. In the pre-liberalizing era, more recent cohorts were more tolerant than previous cohorts. As time passed and these cohorts aged, they became less accepting of same-sex relationships. The end result was a small improvement in the acceptance of same-sex relationships. Although it is beyond the scope of this study to delineate the specific causes of the cohort changes reported here, the theory of generations (Mannheim 1928) suggest that coming of age in eras with more widespread approval of same-sex relationships and when lesbian and gay individuals are more prominent in social and public life may have contributed to the liberalization more recent cohorts' attitudes.

Supportive of our second expectation, and in line with Baunach's (2011) findings, after the initial shift and in the wake of large-scale social change, large, positive IC effects reinforced sizeable, positive CR effects. Older, less tolerant cohorts continued to be replaced by more recent cohorts that were more supportive of same-sex relationships. The share of the population accepting of such relationships rose by 37 percentage points after the initiated public debate. In contrast to the pre-liberalizing period, cohorts' attitudes also tended to shift with the passage of time. During this period, public opinion about same-sex relationships liberalized primarily because of individual attitude change (i.e., cohorts' attitudes became increasingly accepting of such relationships in the following years).

Some scholars such as Flores and Barclay (2015) have hypothesized that the legalization of same-sex unions or marriages will liberalize attitudes toward same-sex marriage and relationships after the policy change (prediction 3 here). We find indirect support for this postulation. After Massachusetts' and other states' legalization of same-sex unions, the liberalization of attitudes

accelerated as IC effects increased, both absolutely and relatively to CR effects. After the Obergefell decision (2015), approval of same-sex relationships jumped from 49.3% (2014) to 58.3% (2018).

The transformation of the mechanisms generating attitudinal change in the pre- and post-liberalizing periods underscores the important effect that the increasing prominence of historically socially stigmatized individuals in social and public life, and the reframing of a contentious social issue, can have on processes of attitude formation and change. In the early 1990s, for example, large majorities of the public opposed the legalization of marriage between two people of same sex (Yang 1997), a position largely based on strong religious and moral undercurrents (Soule 2004). After the initiation of change, activism, and Massachusetts' legalization of same-sex unions, however, lesbian and gay individuals became more prominent in social and public life, and attention increasingly turned to granting basic civil rights and liberties to same-sex couples, including the legality of marriage (Adamczyk and Pitt 2009; Adamczyk 2017). The cultural shift in the framing of lesbian and gay rights and liberties over the past forty years and the heighted role of "out" lesbian and gay individuals in media, politics, business, and family and community life coincided with an unprecedented and remarkable liberalization of attitudes towards same-sex relationships. Today, a dramatically larger share of Americans support gays and lesbians right to marry than did in the past.

Although we are the first to disaggregate the evolution of change in attitudes toward same-sex relationships across three distinctive time periods, this study is not without limitations. Our findings are limited by the measures available in the GSS data. We acknowledge that our measure for attitudes toward same-sex couples is but a single indicator, and recent research shows that approval for same-sex couples is often context-dependent. For example, Americans are generally approving of legal rights for same-sex couples, but they largely remain opposed to informal privileges (e.g., public displays of affection; Doan, Loehr, and Miller 2014). Likewise, a segment of the population still condones discriminating against same-sex couples for religious reasons (Powell, Schnabel, and Apgar 2017). Thus, future researchers should test whether our findings hold for other measures of attitudes toward same-sex couples.

Even with these limitations, an important implication of our results is that, on the surface, there appears to be a single trend in changing public opinion on same-sex relationships. We find *three* different trends that are marked by specific turning points. Although it is beyond the scope of

our analysis to describe what exactly caused these turning points to materialize, we find that the magnitude and composition of the change look different before and after the initial liberalization period. Indeed, a wealth of evidence supports the notion that social, cultural, and legislative shifts can lead to rapid change in public opinion, as these may have done in the same-sex marriage debate. While we cannot claim that the shifting debate and increasing prominence of lesbian and gay individuals led to the increasingly large intracohort change and cohort replacement effects that we observe, the patterns of results are consistent with theories that emphasize the role of pro-rights framing and interpersonal social contact with lesbian and gay individuals on attitudinal change across all ages and birth cohorts. The large size and increasing share of change attributable to intracohort change also indicates that as public opinion shifts toward greater tolerance even the members of older cohorts experience significant attitudinal change.

A second broader implication of our findings is that it is important to attend to temporal shifts in the mechanisms producing attitudinal change during periods of public debate on controversial issues, especially those that shift the framing of the debate. We find that as the framing and debate about same-sex marriage shifted so too did the mechanisms generating change. Our results reinforce critiques of cohort analyses that argue that too often they do not pay enough attention to temporal variation in the mechanism generating cohort change (e.g., Giele and Elder 1998). To truly understand the nature of attitudinal change it is essential that our analyses assess change during socially- and historically meaningful points in time.

REFERENCES

Adamczyk, Amy. 2017. Cross-national public opinion about homosexuality: examining attitudes across the globe. Berkeley, CA: University of California Press.

Adamczyk, Amy and Catherine Pitt. 2009. "Shaping attitudes about same-sex attraction: The role of religion and cultural context." *Social Science Research* 38: 335-351.

Altemeyer, Bob. 2001. "Changes in attitudes toward homosexuals." *Journal of Homosexuality* 42(2): 63-75.

Andersen, Robert and Tina Fetner. 2008. "Cohort differences in Tolerance of same-sex attraction: Attitudinal Change in Canada and the United States, 1981–2000." *Public Opinion Quarterly* 72(2): 311-330.

Andersson, Johan, Robert M. Vanderbeck, Joanna Sadgrove, Gill Valentine, and Kevin Ward. 2013. "Same sex marriage, civil rights rhetoric, and the ambivalent politics of Christian Evangelicalism in New York City." *Sexualities,* 16(3/4), 245-260.

Ayoub, P and J. Gerritson. 2017. "Getting the Message Out: Media Context and Global Changes in Attitudes Toward Homosexuality". *Comparative Political Studies* 50(8):1055–1085.

Baunach, Dawn M. 2011. "Decomposing trends in attitudes toward gay marriage, 1988–2006." *Public Opinion Quarterly* 92(2): 346-363.

Becker, Amy B. 2012. "What's marriage (and family) got to do with it? Support for same-sex marriage, legal unions, and gay and lesbian couples raising children." *Social Science Quarterly* 93(4): 1007-1029.

Becker, Amy B. and Dietram A. Scheufele. 2011. "New voters, new outlook? Predispositions, social networks, and the changing politics of gay civil rights." *Social Science Quarterly* 92(2): 324-345.

-----. 2012. "Determinants of public support for same-sex marriage: Generational cohorts, social contact, and shifting attitudes." *International Journal of Public Opinion Research* 24(4): 524-533.

Brewer, Paul R. 2002. "Framing, value words, and citizens' explanations of their issue opinions." *Political Communication* 19: 303-316.

-----. 2003. "The shifting foundations of public opinion about gay rights." *Journal of Politics* 65(4): 1208-20.

Brewer, P. R. and Clyde Wilcox. 2005. "The polls-Trends: Same sex marriage and civil unions." *Public Opinion Quarterly* 69(4): 599-616.

Brumbaugh, Stacey M., Laura A. Sanchez, Steven L. Nock, and James D. Wright. 2008. "Attitudes toward gay marriage in states undergoing marriage law Transformation." *Journal of Marriage and Family* 70: 345-359.

Butler, Charles J. 1998. "The defense of marriage act: Congress's use of narrative in the debate over same-sex marriage." *NYU Law Review* 73(3): 841-879.

Button, James W., Barbara A. Rienzo, and Kenneth D. Wald. 1997. *Private lives, public conflicts: Battles over gay rights in American communities*. Washington: Congressional Quarterly Press.

Cragun, Ryan T., Emily Williams, and J. Edward Sumerau. 2015. "From sodomy to sympathy: LDS elites' discursive construction of same-sex relationships over time." *Journal for the Scientific Study of Religion* 54(2): 291–310.

Doan, Long, Lisa R. Miller, and Annalise Loehr. 2015. "The power of love: The role of emotional attributions and standards in heterosexuals' attitudes toward lesbian and gay couples." *Social Forces* 94(1): 401–425.

Doan, Long, Lisa R. Miller, and Annalise Loehr. 2017. "Formal rights and informal privileges for same-sex couples: Evidence from a national survey experiment." American Sociological Review 79(6): 1172–1195.

Eldridge, Vicki L., Lisa Mack, and Eric Swank. 2006. "Explaining comfort with homosexuality in rural America." *Journal of Homosexuality* 50(1): 39-56.

Farrell, Justin. 2011. "The young and the restless? The liberalization of young evangelicals." *Journal for the Scientific Study of Religion* 50(3): 517-532.

Firebaugh, Glen. 1989. *Analyzing repeated surveys*. Sage: Thousand Oaks, CA.

Flores, Andrew R. 2015. "Examining variation in surveying attitudes on same-sex marriage: A meta-analysis." *Public Opinion Quarterly* 79(2): 580-593.

Flores, Andrew R. and Scott Barclay. 2015. "Backlash, consensus, legitimacy, or polarization: The effect of same-sex marriage policy on mass attitudes." *Political Research Quarterly* 69(1): 43-56.

Gallup News. 2017. *Gay and lesbian rights*. Princeton, NJ. Gallup. (http://news.gallup.com/poll/1651/gay-lesbian-rights.aspx)

Garretson, Jeremiah G. 2015. "Exposure to the lives of lesbians and gays and the origin of young people's greater support for gay rights." International Journal of Public Opinion Research 27(2): 277-288.

Garretson, Jeremiah G. 2019. *The Path to Gay Rights: How Activism and Coming Out Changed Public Opinion*. New York: NYU Press.

Ghoshal, Raj. 2009. "Argument forms, frames, and value conflict: Persuasion in the case of same-sex marriage." *Cultural Sociology* 3(1): 77-102.

Giele, Janet Z. and Glen H. Elder, Jr. 1998. "Life course research: Development of a field." In Giele, Janet Z. and Glen H. Elder, Jr.. *Methods of life course research: Qualitative and quantitative approaches* (pp.5-27). Thousand Oaks, CA: Sage Publications.

Heinze, Justin E. and Stacy S. Horn. 2009. "Intergroup contact and beliefs about homosexuality in adolescence." *Journal of Youth and Adolescence* 38: 937-951.

Kalleberg, Arne L. and Peter V. Marsden. 2013. "Changing work values in the United States, 1973-2006." Social Science Research 42(2): 255-270.

Kane, Melinda. 2003. "Social movement policy success: Decriminalizing state sodomy laws, 1969–1998." *Mobilization: An International Quarterly* 8(3): 313-334.

Keleher, Alison G. and Eric Smith. 2008. "Growing support for gay and lesbian equality since 1990." *Journal of Homosexuality* 59(9): 1307-1326.

Kiley, Kevin and Stephen Vaisey. 2020. "Measuring Stability and Change in Personal Culture Using Panel Data." *American Sociological Review*. doi: 10.1177/0003122420921538.

Lewis, Gregory B. and Charles W. Gossett. 2008. "Changing public opinion on same-sex marriage: The case of California." *Politics and Policy* 36(1): 4-30.

Loftus, Jeni. 2001. "America's liberalization in attitudes toward homosexuality, 1973 to 1998." *American Sociological Review* 66(5): 762-782.

Mannheim, Karl. 1952. "The Problem of Generations". In Kecskemeti, Paul (ed.). *Essays on the Sociology of Knowledge: Collected Works, Volume 5*. New York: Routledge. p. 276–322

Masci, David. 2008. "A stable majority: Most Americans still oppose same-sex marriage." Pew Research Center for the People & the Press. Available at http://pewforum.org/docs/?DocID=290i.

Miceli, Melinda S. 2005. "Morality politics vs. identity politics: Framing processes and competition among Christian right and gay social movement organizations." *Sociological Forum* 20(4): 589-612.

NORC. 2016. "GSS response period and field period." General Social Survey Other Reports (http://gss.norc.org/Documents/other/GSS%20Response%20Period%20and%20Field%20Period.pdf).

Ohlander, Julianne, Jeanne Batalova, and Judith Treas. 2005. "Explaining educational influences on attitudes toward homosexual relations." *Social Science Research* 34: 781-799.

Olson, Laura R., Wendy Cadge, and James T. Harrison. 2006. "Religion and public opinion about same-sex marriage." *Social Science Quarterly* 87: 340–360.

Powell, Brian, Landon Schnabel, and Lauren Apgar. 2017. "Denial of service to same-sex and interracial couples: Evidence from a national survey experiment." *Science Advances* 3(12): doi: 10.1126/sciadv.aao5834.

Rosenfeld, Michael J. 2017. "Moving a Mountain: The Extraordinary Trajectory of Same-Sex Marriage Approval in the United States." *Socius* doi.org/10.1177/2378023117727658.

Ryder, N. 1965. "The Cohort as a Concept in the Study of Social Change." *American Sociological Review* 30(6), 843-861.

Schnabel, Landon. 2016. "Gender and same-sex relationships, attitudes across religious groups from the 1970s to 2014: Similarity, distinction, and adaptation." *Social Science Research* 55: 31-47.

Sherkat Darren E., Melissa Powell-Williams, Gregory Maddox, and Kylan Mattias De Vries. 2011. "Religion, politics, and support for same-sex marriage in the United States, 1988-2008." *Social Science Research* 40(1): 167-180.

Slenders, Susanne, Inge Sieber, and Ellen Verbakel. 2014. "Tolerance towards same-sex relationships in Europe: Population composition, economic affluence, religiosity, same-sex union legislation and HIV rates as explanations for country differences." *International Sociology* 29(4): 348-367.

Smith, Daniel A., Matthew DeSantis, and Jason Kassel. 2006. "Same-sex marriage ballot measures and the 2004 presidential election." *State and Local Government Review* 38: 78-91.

Smith, Miriam. 2005. "The politics of same-sex marriage in Canada and the United States." *PS: Political Science and Politics 3*8(2): 225-28.

----- . 2007. "Framing same-sex marriage in Canada and the United States: Goodridge, Halpern, and the national boundaries of political discourse." *Social and Legal Studies* 16(1): 5-26.

Soule, Sarah A. 2004. "Going to the chapel? Same-sex bans in the United States." *Social Problems* 51: 453-47.

Treas, Judith. 2002. "How cohorts, education, and ideology shaped a new sexual revolution on American attitudes toward nonmarital sex, 1972–1998." *Sociological Perspectives* 45: 267-283.

Wald, Kenneth D., James W. Button, and Barbara A. Rienzo. 1996. "The politics of gay rights in American communities: Explaining antidiscrimination ordinances and policies." *American Journal of Political Science* 1152-1178.

Yang, Alan S. 1997. "Attitudes towards same-sex attraction. *Public Opinion Quarterly* 61: 477-50.

Figure 1: Historical Trends in Attitudes About Same-Sex Relationships, 1973-2018: General Social Survey

Note: Percentages indicate percent of the population agreeing with the statement "sexual relations between two adults of the same sex are not wrong at all"
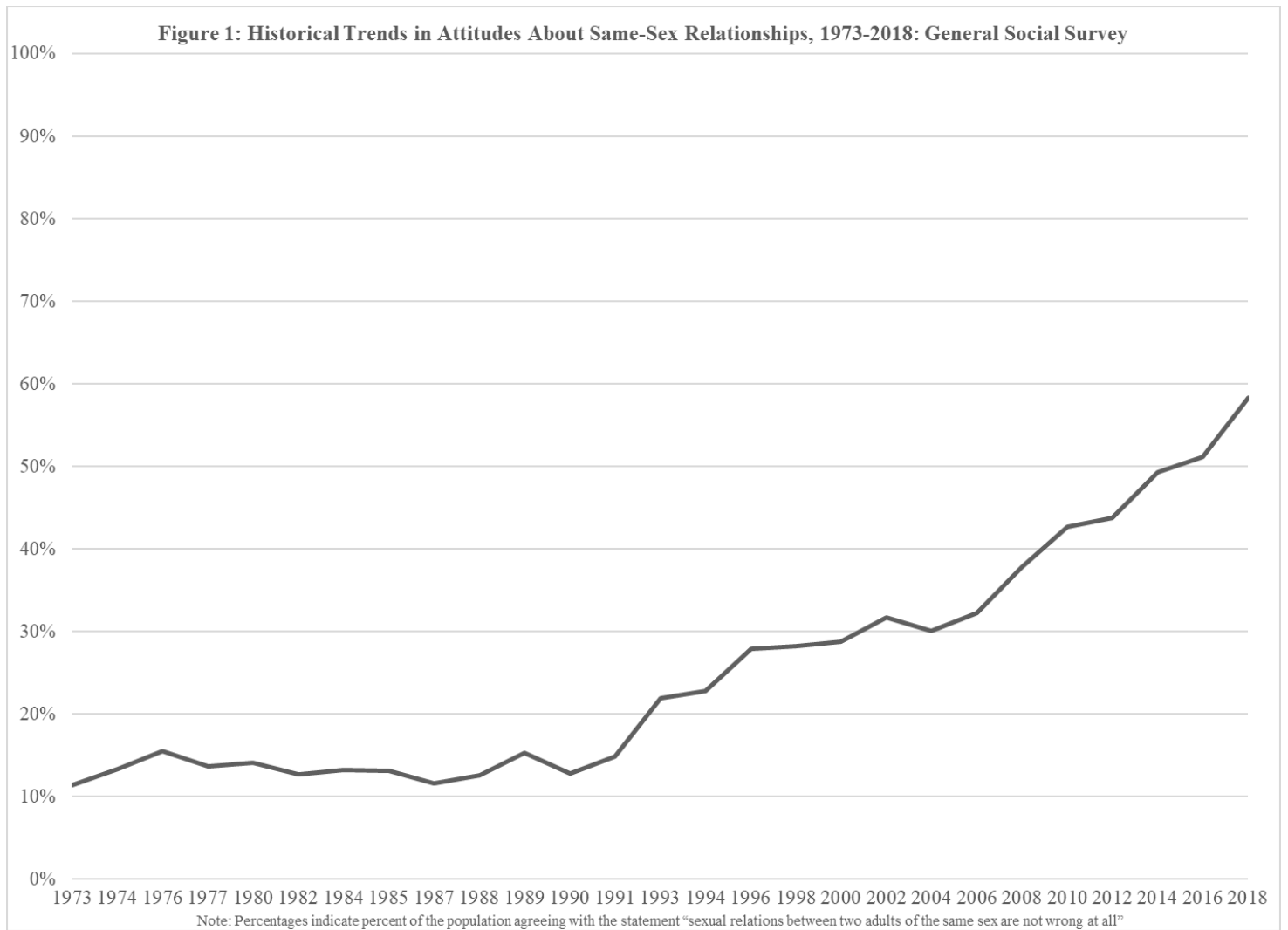
**Table 1: Intracohort Change and Cohort Replacement Betas and Linear Decomposition
of Social Change, 1973-2018: General Social Survey**

| | Slope Coefficients | | | | Decomposition | | | | |
| | | | | | SC | IC | | CR | |
	Year	Std. Err.	Cohort	Std. Err.	Tot.	Est.	% Change	Est.	% Change
Overall									
1973-2018	0.0060***	0.0002	0.0042***	0.0005	0.470	0.272	57.9	0.174	37.0
By Period									
1973-1991	-0.0026***	0.0005	0.0028***	0.0002	0.035	-0.046	-131.4	0.048	137.1
1991-2002	0.0087***	0.0014	0.0049***	0.0003	0.169	0.096	56.8	0.049	29.0
2002-2018	0.0131***	0.0010	0.0056***	0.0003	0.266	0.210	78.9	0.082	30.8

Note: Results are based on linear probability OLS regression of acceptance of same-sex relationships on
year of survey and birth cohort, where acceptance is coded as 1 = "Not Wrong at All" and
0 = "Sometimes," "Almost Always," or "Always Wrong."
Note: "Std. Err."= Standard Error; "SC"= Social Change; "IC"=Intracohort Change; "CR"=Cohort Replacement
*p <.05, **p <.01, ***p<.001

Table 2: Intracohort Change and Cohort Replacement Betas and Linear Decomposition
     of Social Change, 1973-2018: General Social Survey

	Slope Coefficients				Decomposition				
					SC	IC		CR	
	Year	Std. Err.	Cohort	Std. Err.	Tot.	Est.	% Change	Est.	% Change
Overall									
1973-2018	0.0033***	0.0013	0.0258***	0.0008	2.389	1.481	62.0	1.080	45.2
By Period									
						-			
1973-1991	-0.0250***	0.0045	0.0266***	0.0015	0.307	0.449	-146.3	0.452	147.2
1991-2002	0.0463***	0.0078	0.0284***	0.0016	0.978	0.509	52.0	0.284	29.0
2002-2018	0.0570***	0.0045	0.0247***	0.0013	1.104	0.912	82.6	0.360	32.6

Note: Results are based on logistic regression of acceptance of same-sex relationships on year of survey and
     birth cohort, where acceptance is coded as 1 = "Not Wrong at All" and 0 = "Sometimes," "Almost Always,"
     or "Always Wrong."
Note: "Std. Err."= Standard Error; "SC"= Social Change; "IC"=Intracohort Change; "CR"=Cohort
Replacement
*p <.05, **p <.01, ***p<.001

Table S1: Intracohort Change and Cohort Replacement Betas and Linear Decomposition of Social Change, 1973-2018: General Social Survey

| | Slope Coefficients | | | | Decomposition | | | | |
| | | | | | SC | IC | | CR | |
	Year	Std. Err.	Cohort	Std. Err.	Tot.	Est.	% Change	Est.	% Change
Overall									
1973-2018	0.0156***	0.0002	0.0143***	0.0001	1.342	0.703	52.4	0.599	44.6
By Period									
1973-1991	-0.0160***	0.0006	0.0118***	0.0002	-0.0024	-0.287	120.8	0.204	-85.8
1991-2002	0.0319***	0.0014	0.0156***	0.0003	0.586	0.351	59.9	0.157	26.8
2002-2018	0.0371***	0.0009	0.0168***	0.0003	0.758	0.594	78.4	0.245	32.3

Note: Results are based on OLS regression of acceptance of same-sex relationships on year of survey and
   birth cohort, where acceptance is coded as 1 = "Always Wrong," 2 = "Almost Always Wrong,"
   3 = "Sometimes Wrong," and 4 = "Not Wrong at All."
Note: "Std. Err."= Standard Error; "SC"= Social Change; "IC"=Intracohort Change; "CR"=Cohort Replacement
*p <.05, **p <.01, ***p<.001