

# How and Why the Identity of Substance Users Shapes Public Opinion on Opioid Treatment Policy

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## Abstract

How do the identities of potential policy beneficiaries sway public support for these policies in a public health setting? Using a factorial randomized survey experiment fielded on a high-quality nationally-representative sample, we show that the racial identity and residential location of substance users depicted in a news story shape public opinion on policies to address the opioid overdose crisis. People display ingroup biases in favor of members of their racial and residential identity groups that manifest in their support of both treatment-based policies and punitive policies. We show that these biases are unlikely to be explained by the common theoretic mechanism of differential perceived blame. These results highlight the centrality of group identities in the formation of public policy preferences.

Keywords: group identity, public health, addiction, healthcare, public policy

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Each day, nearly 200 Americans die from a drug overdose, making overdose the leading cause of death for Americans under age 50 (Katz, 2017; Sanger-Katz, 2018). The rise in overdoses has been driven by the use of opioids: two-thirds of overdoses in 2016 involved an opioid (SAMHSA, 2016). Though opioid overdoses are not a new phenomenon, the current opioid crisis has permeated the media with stories of substance use and addiction, thereby raising awareness of these issues among the public. This has been accompanied by increased calls for healthcare policies — specifically, addiction treatment programs — suited to address the crisis (Daley and Fortier, 2018; Kolodny et al., 2015; Pugh, 2017; Saloner and Barry, 2018). The deaths of large numbers of substance users has spurred many legislators in Congress to introduce bills designed to provide medical treatment and halt the rise in mortality. In contrast, legislative responses to previous drug crises were more punishment-oriented (Kim, Morgan, and Nyhan, 2019).

What has caused this increased attention by the media, the public, and policymakers to drug addiction, and a focus on treatment-based rather than punitive policy responses? Popular narratives have focused on how, compared to previous drug addiction crises, the current opioid crisis affects different people and places. Specifically, the geography of the current crisis cuts across lines of class, race, and ideology, and reaches more rural, whiter, conservative, and less wealthy parts of the United States (Jalal et al., 2018; Keyes et al., 2014; Monnat, 2018). In contrast, previous drug crises — such as the crack epidemic of the 1980s — affected largely minority populations living in urban population centers. In turn, substance users depicted in media stories on the current opioid overdose epidemic have been whiter and less urban than in media narratives during the crack scare (Harbin, 2018; Netherland and Hansen, 2016).

These differences in the identities of opioid substance abusers may be what has caused public opinion — and subsequently public policy — to support treatment over punishment compared to during past drug crises. Past research has shown that associating racial minorities with other policies, such as welfare and the Affordable Care Act (ACA), may cause

white Americans to oppose those policies (e.g., Gilens, 1996, 1999; Tesler, 2012). The whiter and more rural media narrative surrounding the opioid crisis could, in an opposite effect, drive members of the public to support opioid treatment policies. Sharing racial, political, or location-based identities with potential policy beneficiaries may make people more sympathetic to those beneficiaries and favor treatment-based policy responses over punitive ones. Extending theories of public opinion – and the way that multiple group identities may influence policy opinions – to this issue area is crucial for understanding both how policymakers and the public have responded to the opioid crisis up to this point. Understanding the public’s response can help to assess the political feasibility of future policy solutions related to both the opioid crisis and other contemporary health crises.

In this project, we empirically assess how the identity of substance users depicted in the media shapes public opinion on policy responses to the opioid crisis using an experiment. We compare people’s responses to media descriptions of people with substance use disorder in the current drug crisis using a preregistered factorial randomized survey experiment that varies features of the recovering substance user depicted in a news article. Our results indicate that the racial identity and residential location of opioid users shape policy support for treatment or punishment. We show that people differ in their policy support when they are shown stories of substance users who share their own racial and residential background. In an advance over previous work demonstrating racial ingroup biases in policy preferences, we show that these effects extend to other group identities and extend in the opposite direction for opinion on punitive policies. Moreover, we explore one mechanism behind these effects on policy opinions proposed by theories of social policy: the changed perceptions of individual blame for opioid addiction. Together, these results demonstrate how and why media depictions of the people affected by specific policies may shift public opinion. Specifically in the case of the current opioid crisis, our results suggest that the identity of those people with substance user disorder depicted in the media has driven the public response and the political motivation for policy change.

The paper proceeds as follows. First, we briefly review the literature on opinion surrounding public policy and theoretical expectations for the role of group identity in the formation of policy opinions — as well as potential mechanisms for these effects. Next, we discuss the design of our factorial randomized survey experiment and the survey sample on which we field this design. We then discuss our results, along with preregistered analyses within relevant subgroups that fully demonstrate the role of shared group identities. To fully explore the mechanisms behind these results, we then conduct mediation analyses to assess whether perceptions of blame drive our main results on policy opinions. Finally, we conclude and discuss the implications of our findings for policy representation.

## Theoretical Expectations

Media stories about the opioid crisis have differed in their coverage from those during previous drug crises. Coverage has often featured white rather than non-white substance users (Harbin, 2018). Moreover, these stories have used language highlighting the medical dimension rather than the criminal justice dimension of the crisis (Shachar et al., 2019). The identities of the people and the language used in these stories may be one reason support for opioid treatment policies is so high. This is reflected in claims in both popular media and research studies that ‘whiteness’ is driving national attention to the current epidemic (Netherland and Hansen, 2016; Lopez, 2017).

Why might the identity of people affected by the opioid crisis increase attention to the crisis and more broadly shape opinion on related public policy? Numerous policy attitudes polarize along lines of group identity (Nelson and Kinder, 1996). When white Americans believe that policies will target benefits to black people, they are often less supportive of these policies than when they believe these policies will benefit white people (e.g., Feldman and Huddy, 2005; Gilens, 1999; Harell, Soroka, and Iyengar, 2016; Wetts and Willer, 2018). These dynamics play out in numerous policy areas, including welfare policy, affirmative

action, crime, and taxes. Health care policy opinions in particular have been shaped by racial bias more recently (Israel-Trummel and Shortle, 2019; Tesler, 2012).

Racial biases in policy opinions may not be restricted to white members of the public. Black Americans may also have policy opinions that are shaped by racial attitudes, albeit in substantively distinct ways than among white Americans (Kam and Burge, 2018, 2019; Kinder and Winter, 2001; White, 2007). Indeed, while many white Americans may be less supportive of policies benefiting members of racial outgroups, black Americans may also oppose policies focused on other black Americans because of beliefs that these policies might enable poor behavior that reflects badly on other members of the racial ingroup (Jefferson, 2019).

Much of the literature on the role of race and identity in policy opinions has focused on beneficial policies that would differentially benefit people of certain identity groups. However, other social policies do not benefit those who interact with them. Policies proposed to address illicit drug use – such as those proposed to address the opioid crisis – are responses to an illegal behavior, and so the portfolio of policy options usually involves more punitive policies. Such policies, including law enforcement, often impact members of different racial groups in disparate ways (e.g., Beckett, Nyrop, and Pfingst, 2006). Opinions about such punitive policies may also be racialized (Hurwitz and Peffley, 2005). White Americans may be more supportive of punitive policies that will impact black people due to outgroup biases. Black Americans may have similar dynamics in their opinions, in which they are more likely to favor punitive policies that affect outgroups rather than other black Americans. On the other hand, black Americans might instead see punitive policies as a way to enforce group norms due to the dynamics of “respectability politics” (Fortner, 2015; Forman Jr., 2017; Jefferson, 2019). Public opinion on punitive public policies may therefore be influenced by the perceptions of the racial identities of those most affected by the policies.

Media narratives depicting policy beneficiaries as being from one racial group — not necessarily in an accurate reflection of reality — may play into these opinions (Jengelley

and Clawson, 2019). People's racial bias may be more likely to be activated when political communication associates public policies with certain racial groups (Gilens, 1999; Winter, 2008). However, people's personal experiences with policy may anchor their opinions about public policies, especially when the potential benefits of these policies are widespread among the population. Indeed, a 2016 Kaiser Family Foundation poll found that 44% of the American population knew someone who had struggled with addiction to prescription painkillers (Firth, Kirzinger, and Brodie, 2016). Likewise, a heightened degree of self-interest in policy issues where the costs and benefits play out close to home – as with the opioid crisis – may moderate other influences on public opinion (de Benedictis-Kessner and Hankinson, 2019).

The social group identities that affect support for public policies may be especially broad given the unusual context of the opioid crisis. Especially unusual is the geographic context of the opioid crisis, which unlike past drug crises has been accompanied by higher rates of prescription drug misuse and higher rates of overdose in rural areas of the US than in urban areas (Keyes et al., 2014; Monnat and Rigg, 2016). People may therefore have opinions on opioid-related policies that depend on the rural or urban identities of the people most targeted by the policies as well. People may even display residential context-based ingroup preferences reflective of Cramer's (2016) theory of 'rural consciousness' and the growing urban-rural political divide (Cramer Walsh, 2012; Rodden, 2019). In particular, people may be more supportive of policy that will potentially benefit people who come from a similar residential context.

Group identity may shape opioid policy opinions through the mechanism of perceptions about individual blame. Support for social policies often depends on perceived deservingness of the policy beneficiaries (Campbell and Morgan, 2005; Gilens, 1999; Katz, 1989). For instance, substance users have traditionally been viewed as personally responsible for their condition and thus undeserving of assistance (Jencks, 1992). Unlike in past drug crises wherein substance abusers were seen as deviant, many Americans view the opioid epidemic as an unclear case of personal responsibility. More broadly, a 2017 American Psychiatric

Association poll found that 69% of Americans can “understand how someone accidentally gets addicted to opioids” (American Psychiatric Association, 2017). A likely reason for this is that many opioid addictions begin with painkillers prescribed by a doctor (Cicero et al., 2014).

Group identity may contribute to this social construction of deservingness (Fang and Huber, 2019; Schneider and Ingram, 1993). Research in social identity theory has long argued that a strong collective identity fosters feelings of mutual obligation among group members (Tajfel, 1982). The fundamental attribution error may lead some people to see those people who share a group identity with them as less responsible for unfortunate circumstances and therefore more deserving of help (e.g., Bullock, 1999; Jones and Nisbett, 1971). Racial identity may play a particularly potent role in this mechanisms behind the formation of opinion on public policies and, in our case, opioid treatment policy (Michener, 2019; Soss and Schram, 2007).<sup>1</sup> In the case of opioid-related policies, people’s support may therefore be shaped by group identity via their perceptions of a substance user’s blame for their own addiction.

## Research Design and Data

To test these hypotheses, we use a vignette-style factorial randomized survey experiment that — like a conjoint experiment (Hainmueller, Hopkins, and Yamamoto, 2014) — allows us to vary information provided in order to estimate a causal effect of each piece of information that is varied. In contrast to many conjoint experiments, we do not have respondents make binary choices but instead ask them for their policy preferences (e.g., Stokes and Warshaw, 2017). In our experiment, we vary information in a news article describing a person struggling with substance use. We constructed this news article by combining elements of text from

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<sup>1</sup>The racial identity of people depicted in media stories about the opioid crisis may also shape perceptions of which groups are “losing” in both the political and public health arenas (Gollust and Miller, 2019). Though we do not assess this potential mechanism here, perceptions of loser status may be another pathway through which opinions on policy are formed.

actual published news articles during the past two years. Following standard design of conjoint experiments, we experimentally varied attributes of the substance user depicted in this story. We randomly chose one level of each of the following attributes of the substance user presented in the story without any restrictions: their racial identity, gender, residential location, pathway to addiction, and source of insurance.<sup>2</sup> The research design, protocols, hypotheses, and analyses were pre-registered at EGAP prior to data collection.

We vary racial identity by both presenting different photos at the beginning of the article and by utilizing different names for the recovering substance user. The photo depicted their hands holding a syringe or pills without any additional identifiers such as income-level or facial expressions (Doleac and Stein, 2013).<sup>3</sup> Examples of two of these photos, varying by race, are shown below in Figure 1, and all photos that we used are presented in Appendix C. We also varied the person's name between one commonly attributed either to non-Hispanic whites or to African-Americans (Gaddis, 2017).<sup>4</sup>



Figure 1: Example photos accompanying news story (from the white/black male Oxycontin conditions)

<sup>2</sup>All experimentally varied attributes and levels of each attribute are fully described in Appendix A.

<sup>3</sup>Such photos are exceptionally common in articles about substance abuse.

<sup>4</sup>To account for socio-economic factors within race, we selected two names for each race-gender pairing, with a name from both the lowest and highest education quartile within each race.

We varied other group identity attributes of the person depicted in the news story in simpler ways. We varied gender identity via the substance user's name and the use of gendered pronouns in the news story. We varied the person's residential location by describing the person as living in one of three alternate locations: a rural farm, a quiet suburb, or an urban downtown center.

We also varied the description of how the substance user received treatment for their addiction between three options. We describe the person as receiving coverage for treatment through a private insurance provider, through subsidies provided by the Affordable Care Act/‘Obamacare’, or through Medicaid. Finally, we varied the person's pathway to addiction using three potential options. In the first two options, we describe the person as having originally used opioids illegally by receiving either heroin or the painkiller OxyContin from a friend at a party. In the third option, we describe the person as having injured their knee and requiring surgery, after which the person's doctor prescribed OxyContin for pain during recovery.<sup>5</sup>

We use three primary outcome variables. First, to measure support for opioid *treatment* policy, we asked each respondent their desired degree of change to federal funding for opioid treatment programs as follows: “If you were making up the budget for the federal government this year, would you increase, decrease, or keep spending the same for treatment for those addicted to opioids?” Second, to measure support for a *punitive* response to the opioid crisis, we asked each respondent their desired degree of change to federal funding for law enforcement activity as follows: “If you were making up the budget for the federal government this year, would you increase, decrease, or keep spending the same for law enforcement to arrest and prosecute those addicted to opioids?” Response options for both questions were

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<sup>5</sup>Following the recommendations of Kane and Barabas (2019), we include a series of factual manipulation checks for each of these manipulations. After respondents answered our dependent variables, they answered two (randomly selected out of the total five) multiple choice questions about the characteristics of the individual profiled in the treatment article (shown in Appendix B). To ensure respondents were recalling from memory, we removed any ability to click backwards to review the news article. Overall, our experimental manipulations were overwhelmingly effective at shifting the perceived characteristics of the substance user in the article. Full results from these manipulation checks are presented in Appendix D.

“increase a lot,” “increase a little,” “keep the same,” “decrease a little,” and “decrease a lot.”<sup>6</sup> Finally, we explore the mechanism behind the role of identity on policy opinions by asking about individual blame and deservingness, a critical theoretical pathway through which racial identities have been shown to influence public opinion. We operationalize this concept by asking respondents’ opinions on the responsibility of individuals for their own addiction. We asked respondents: “Would you agree or disagree that individuals addicted to opioids are to blame for their own addiction?” The five response options ranged from “strongly agree” to “strongly disagree.”

Given that many of our hypotheses concern the correspondence between a survey respondent’s identity and the identity of the person depicted in the news article, we also measured several different characteristics of each survey respondent. We measured each respondent’s demographic data and self-reported ZIP codes to code each respondent’s race, gender, partisan identity, and residential location using pre-existing panel data.<sup>7</sup> We also asked respondents whether they personally know anyone who has dealt with opioid addiction, or if they themselves have.

We fielded this survey on a nationally-representative probability sample of 3,112 adult respondents recruited via NORC’s AmeriSpeak Panel in June 2019. Specifically, the sample was selected from the AmeriSpeak panel by sampling within strata of age, race/ethnicity, education, and gender. In addition, the sampling strategy makes use of expected differential response rates in order to produce enhanced representation of “hard-to-reach rural households” (NORC, 2016), allowing us to make refined estimates of respondent subgroup opinions among populations of special interest for this project. We present additional sampling details, as well as full descriptive statistics for our sample, in Appendix E.

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<sup>6</sup>Full wording of all survey questions is in Appendix B.

<sup>7</sup>We code residential location as either ‘urban,’ ‘suburban,’ or ‘rural’ based on the population density classifications described by Kolko (2015).

## Results

We first analyze the treatment effects of each of our identity attribute manipulations across the entire survey sample.<sup>8</sup> We tested for this effect by comparing the average support for increased treatment and law enforcement funding among the different treatment conditions. For each attribute that we varied, we assess the differential levels of policy support between all attribute levels. We recode our main outcome variables, respondents' desired increase or decrease in spending, into binary measures of support that take a value of 1 if respondents supported increasing funding by a lot or a little and a value of 0 otherwise. We similarly recode our outcome of individual blame with a value of 1 if respondents agree that those struggling with addiction are to blame for their own addiction and a value of 0 otherwise.<sup>9</sup>

Figure 2 plots our treatment effects of each attribute level among the full sample of respondents on our measure of support for treatment funding, law enforcement funding, and perceptions of individual blame, with effects in the positive direction indicating greater support. For each attribute, we use one level as the reference category and show treatment effects of other attribute levels relative to that baseline.

Among our full sample of respondents, none of the three identity attributes of the substance user affected support for either treatment or law enforcement funding. Respondents who read the news story about a substance user who was black were a statistically insignificant 1 percentage points less likely to support increasing funding for treatment than those who read about a white substance user. Respondents who read the news story about a female substance user reported levels of support that were nearly identical to support among those who read about a male substance user. The residential identity of the substance user also had relatively small treatment effects that were not statistically significant. Respondents who read about a substance user in a suburban location were identically supportive of treat-

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<sup>8</sup>Treatment effects from the substance user's pathway to addiction and source of insurance for treatment are discussed in another manuscript.

<sup>9</sup>All results are nearly identical when using the full outcome scales rather than the binary coding of the dependent variables (Appendix F).

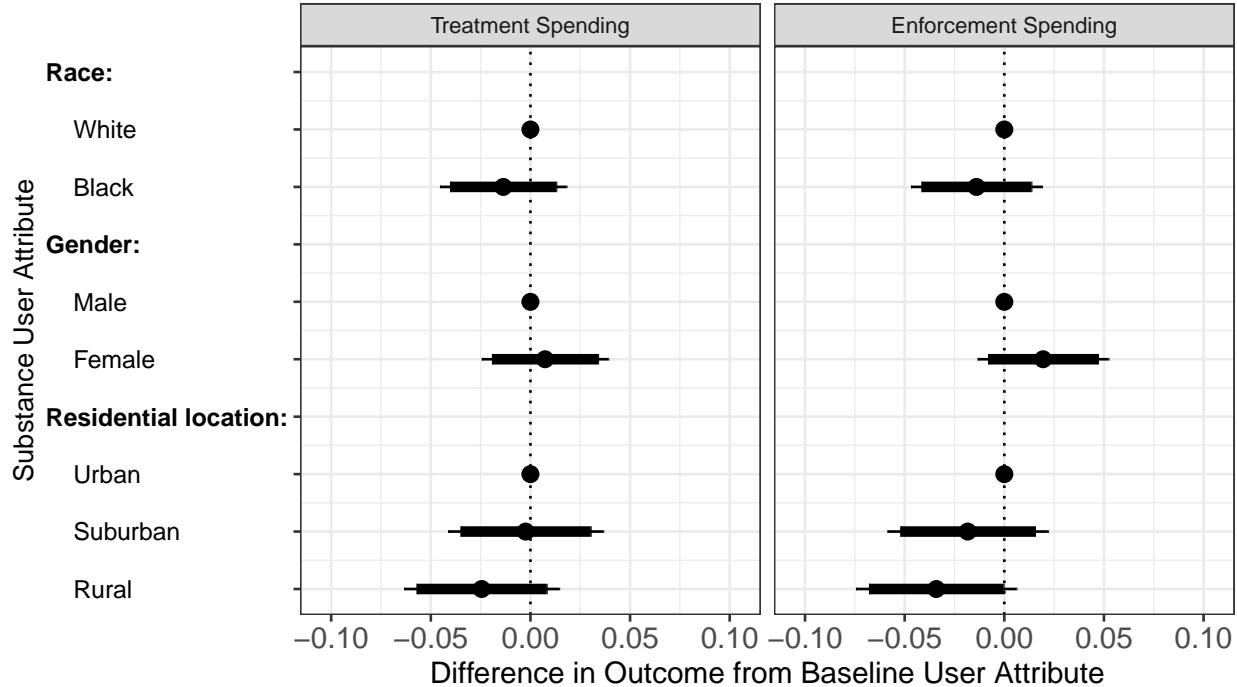


Figure 2: Treatment effects and confidence intervals among all respondents. Points are regression coefficients and indicate the difference in levels of support for increasing policy funding between respondents in the baseline level condition (no confidence interval) compared to respondents in conditions with all other attribute levels. Lines indicate 95%-confidence intervals (thin lines) and 90%-confidence intervals (thick lines).

ment funding than those respondents who read about a substance user in an urban location, and similarly those who read about a rural substance user were only 2 percentage points less supportive of funding than those who read about an urban substance user.<sup>10</sup> None of these differences were statistically significant among our full sample of survey respondents. The identity effects on support for treatment funding were nearly identical for law enforcement funding.

## Moderation from Respondents' Identities

However, our main theoretical expectation and corresponding preregistered hypothesis held that the influences of these group identities on opinion would hinge on the respondents'

<sup>10</sup>Respondents who read about a suburban substance user did not report support for treatment funding that was statistically distinguishable from those who read about a rural substance user ( $\beta = 2$  percentage points).

own identities. To assess this type of treatment effect heterogeneity, we next present the analyses of our treatment effects for race, gender, and residential location among subgroups of respondents. This allows us to assess descriptive moderation of treatment effects when a substance user’s identity matches that of the respondent.<sup>11</sup> For each attribute of the substance user depicted in the news story in our experiment, we compare the treatment effect among the group of respondents whose own identity matches one attribute level to the effect among the group of respondents whose identity does not match that attribute level.<sup>12</sup>

We first assess the degree to which respondents’ racial identity moderates the treatment effect of the substance user’s race. As described above, we observed an overall null treatment effect of the race of the substance user depicted in the news story on both policy outcomes, which we plot at the top of the two panels in Figure 3. However, this treatment effect operates heterogeneously, as evidenced by the effects among respondent’s racial groups, which we plot in the middle and on the bottom of Figure 3 for black and white respondents, respectively.

For our treatment funding policy outcome, plotted in the left panel of Figure 3, among black respondents, those in the ‘black’ treatment condition were 8 percentage points more likely to support treatment funding than those respondents in the ‘white’ treatment condition. In contrast, among white respondents, those in the condition depicting a black substance user were 4 percentage points less supportive of a funding increase than those in the condition depicting a white substance user. The difference of 12 percentage points between these effects, as measured by the interaction between the experimental manipulation and respondents’ race, is statistically significant ( $p = 0.014$ ).<sup>13</sup> The larger magnitude of the effect of race among black respondents on this outcome is particularly interesting, as it

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<sup>11</sup>We should note, of course, that all conditional treatment effects are simply descriptive differences in the causal effects of our attribute levels, and do not necessarily represent *causal* differences of these respondent characteristics (Kam and Trussler, 2017).

<sup>12</sup>We should note that subgroup treatment effects represent causal effects of our experimental factors relative to baseline attribute levels among the subgroups of interest and do *not* represent descriptive differences in preferences overall (Leeper, Hobolt, and Tilley, 2019).

<sup>13</sup>This interaction test for the moderation of treatment effects follows our preregistered method for testing for this difference. It also follows best practice for testing for heterogeneous treatment effects in experiments (Fang, 2019; Coppock, Leeper, and Mullinix, 2018).

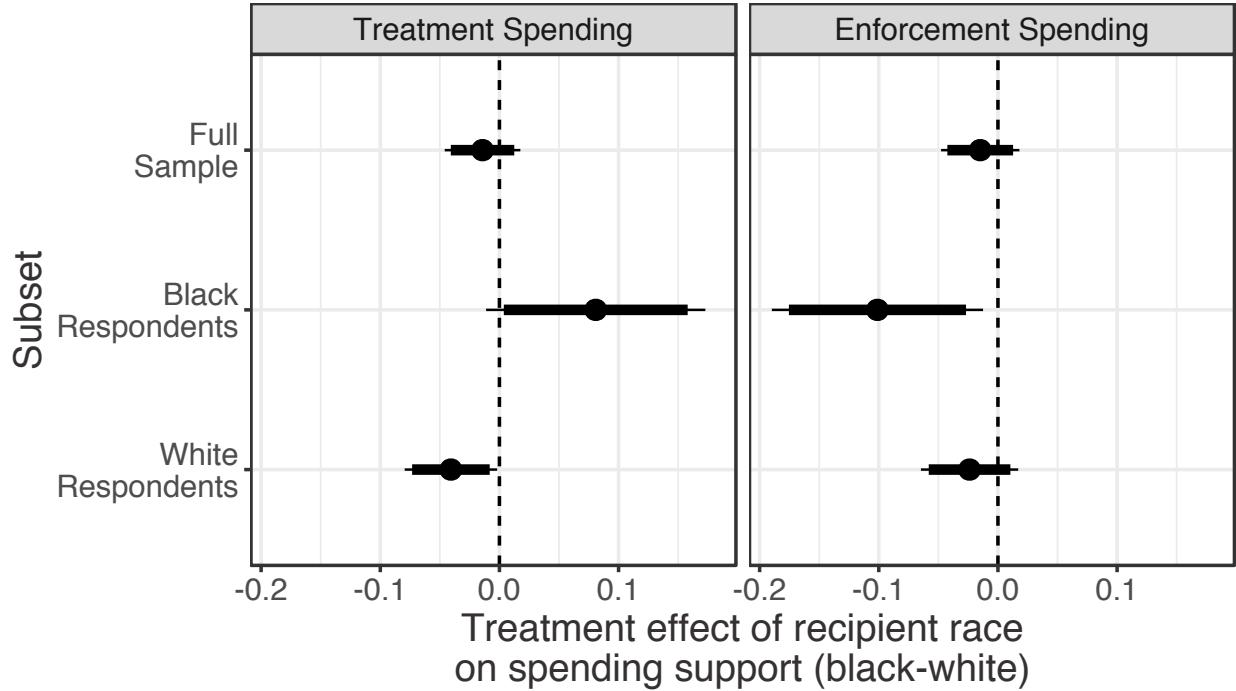


Figure 3: Treatment effects and confidence intervals by respondent race. Points indicate the difference in levels of support for increasing policy funding between respondents who saw a black individual profiled and a white individual profiled, with 95%-confidence intervals (thin lines) and 90%-confidence intervals (thick lines).

challenges existing theories that mainly concern the ingroup favoritism of *white* Americans – and their potential racial animus – when it comes to social policy opinions.

For our policy outcome on law enforcement spending, plotted in the right panel of Figure 3, we observed effects that mirror those of our treatment spending outcome. Black respondents in the ‘black’ treatment condition were statistically significantly less likely to support increased enforcement spending than black respondents in the ‘white’ treatment condition by 10 percentage points. We observed a small and statistically insignificant effect among white respondents. The difference between these two subgroup effects of 8 percentage points is not statistically significant ( $p = 0.135$ ). Thus, in contrast with our treatment spending outcome, respondent race did not moderate the effect of racial identity on support for a punitive spending policy. This may be because of different cultural perceptions of the role of law enforcement in responding to drug epidemics. Racial bias in the enforcement

and sentencing of drug offenses during crack epidemic likely informs many Black Americans perception of law enforcement today (Bobo and Johnson, 2004). In contrast, white Americans did not experience similarly high levels of incarceration and its community-wide consequences (Western, 2006). Consequently, white Americans current attitudes towards law enforcement in response to a drug offense may not be as polarized by race.

We next assess the role of respondents' gender identity in moderating the treatment effect of gender, which we show in Figure 4. As described in the previous section, among the full sample of respondents, we observed a null treatment effect of the gender of the substance user depicted in the news story on both policy outcomes, as plotted at the top of Figure 4. Neither male nor female respondents showed ingroup preferences on our treatment spending outcome. Among male respondents, those who saw a story about a male substance user were almost identically supportive of increasing funding as those who saw a story about a female substance user. Among female respondents, those who saw a story about a male substance user were slightly less likely to support increased treatment funding, but both effects are statistically indistinguishable from zero. The difference in the size of the two effects between respondent gender identity subgroups of 2 percentage points was also not statistically significant.

However, on our enforcement spending outcome, we observed policy opinions that exhibited gender identity *outgroup* favoritism among female respondents. Among male respondents, those who saw a story about a male substance user were 2 percentage points more likely to support increased punitive enforcement funding. However, among female respondents, those who saw a story about a male substance user were 6 percentage points less likely to support increased law enforcement funding. The interaction between respondent gender and the gender of the substance user portrayed in the article was a statistically significant 8 percentage points ( $p = 0.017$ ). This suggests that, in contrast to our hypotheses, women who saw a substance user of their own gender were *more* likely to support punitive enforcement spending – despite the fact that the news article would suggest that such policies would

negatively impact members of their own group.

This result contrasts with existing literature on support among female politicians and members of the public for social policies that target women (e.g. Holman, 2014; Strolovitch, 2008). However, it follows theory predicting a “black sheep effect” wherein members of an ingroup punish those violating group norms to protect their group’s reputation (Eidelman and Biernat, 2003; Marques and Paez, 1994). This ingroup sanctioning specifically among women may arise in connection to a prejudice against pregnant women using heroin and potentially bearing “addicted babies” (Gomberg, 1982). Additionally, ingroup sanctioning agrees with other recent research highlighting the intersectional nature of gender, race, and class in the formation of policy attitudes. Women may feel an increased social distance along race or class dimensions despite a shared gender identity, and therefore be less supportive of policies that benefit women (Cassese and Barnes, 2019; Cassese, Barnes, and Branton, 2015; Hancock, 2004; Levine-Rasky, 2011).

Finally, we conduct similar analyses of the treatment effect of residential context among respondent subgroups of residential context. We plot the effects of the residential context of the individual portrayed in the article for our treatment spending outcome in the left panel of Figure 5 and for our law enforcement spending outcome in the right panel, using separate shapes for each of the three comparisons between experimental conditions. We show these effects for our full respondent sample on the top, and among respondents in rural locations (second from the top), suburban locations (third), and urban locations (on the bottom). For our first policy outcome, among the full sample of respondents, reading about a rural versus an urban substance user had a null effect, as described earlier. Among rural respondents, those who saw a story about a rural substance user were no more or less likely to support treatment funding than those who saw a story about an urban substance user or a suburban substance user. We see similar null effects among suburban respondents. However, among urban respondents, those who saw a story about a rural substance user were 7 percentage points less likely to support treatment funding than those who saw a story about an urban

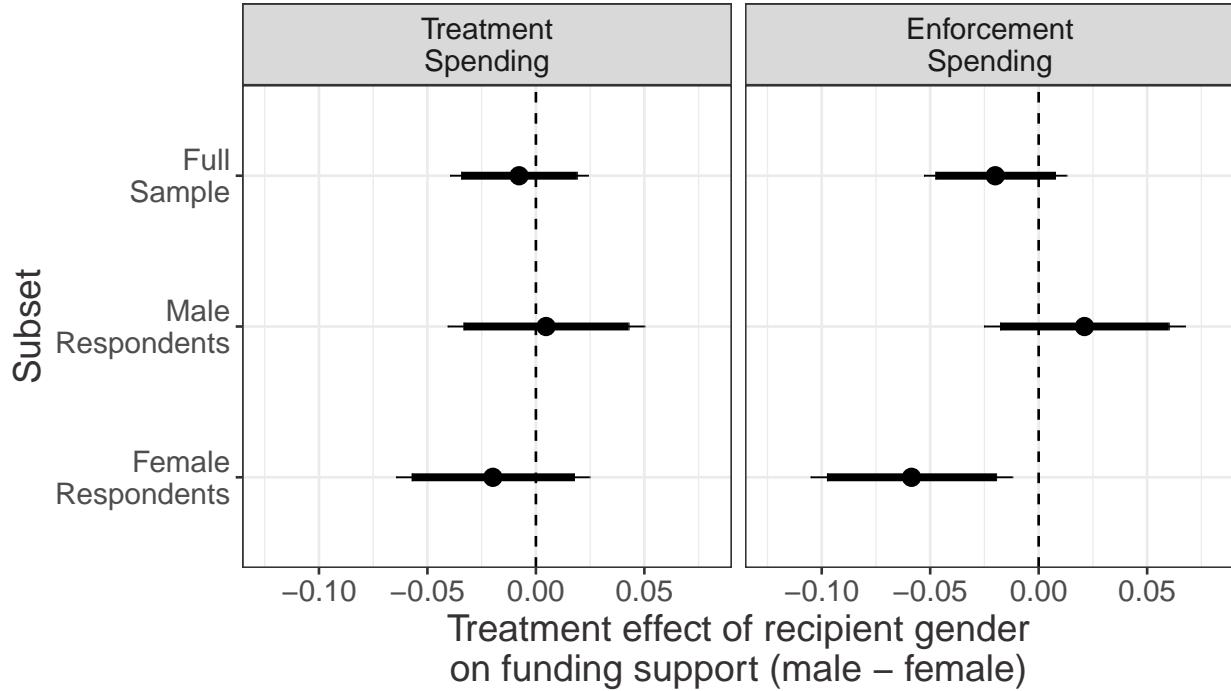


Figure 4: Treatment effects and confidence intervals by respondent gender. Points indicate the difference in levels of support for increasing policy funding between respondents who saw a male substance user profiled and those who saw a female substance user profiled, with 95%-confidence intervals (thin lines) and 90%-confidence intervals (thick lines).

substance user ( $p = 0.053$ ). Similarly, those who saw a story about a suburban substance user were 5 percentage points less likely to support such policy than those who saw a story about an urban substance user, though this effect is not statistically significant. In other words, urban respondents showed some degree of ingroup favoritism, but rural and suburban respondents showed little favoritism for people from their own residential context.

For our second outcome, support for law enforcement spending policy, we see different subgroup effects. As described earlier, we see a small negative effect of reading about a rural substance in the article relative to an urban substance user on support for punitive policy: people are marginally more sympathetic to rural substance users ( $p = 0.09$ ). When we break this down by respondents' own residential context, however, we do not see effects that mirror those on treatment funding policy. Instead of ingroup favoritism among urban respondents, we in fact see some evidence of *outgroup* favoritism among suburban and urban

respondents. Among suburban respondents, those who read about a suburban substance user were 3 percentage points less supportive of enforcement policy than those who read about an urban substance user, and 5 percentage points less supportive of such policy when they read about a rural substance user rather than an urban substance user. Together, these results show that while shared residential group identity may be a compelling influence on opinion on policies to confront the opioid crisis, it is not equally powerful for all people. Its effects are limited to suburban and urban respondents in our sample. Rural group consciousness does not seem to extend to opinions on opioid-related policies.

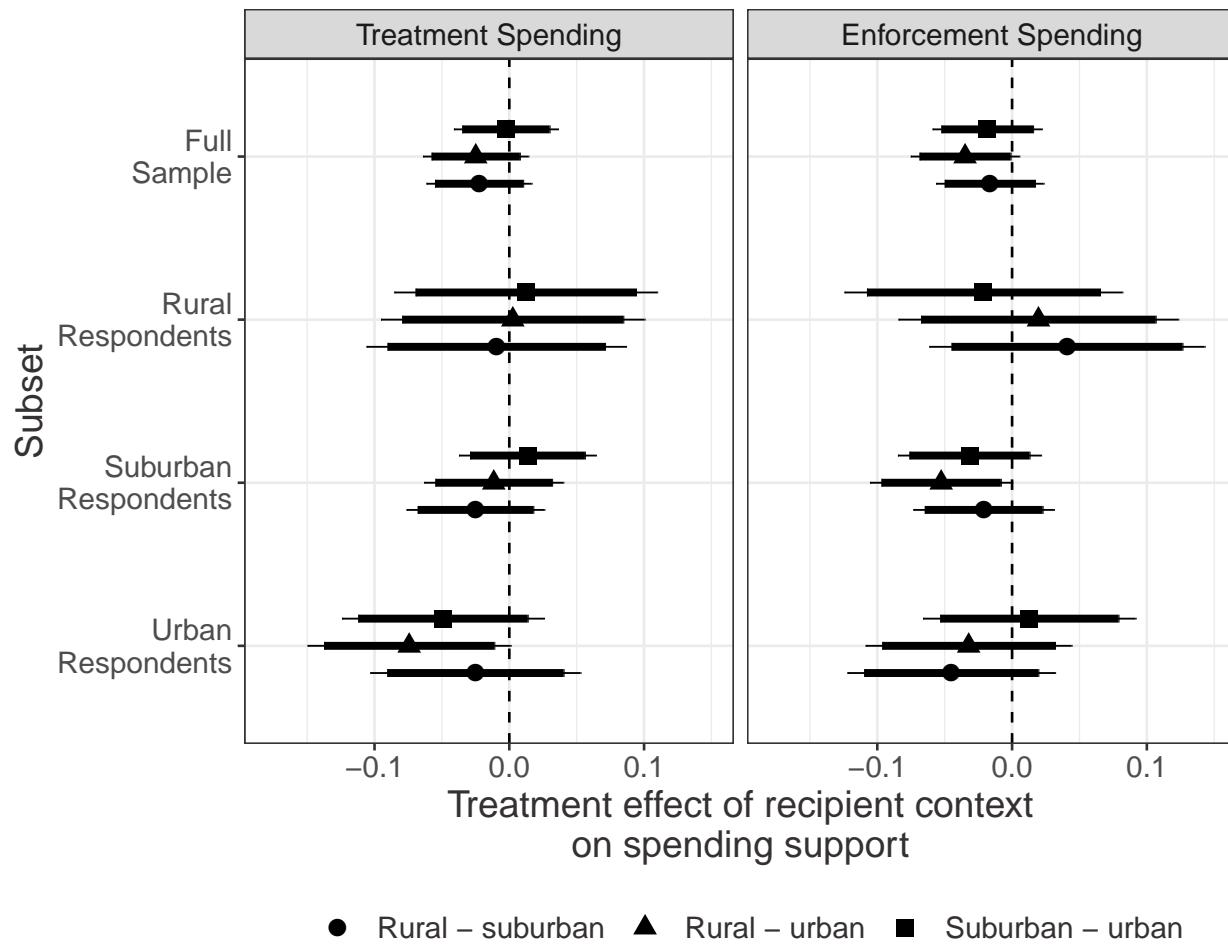


Figure 5: Treatment effects and confidence intervals by respondent geographic context. Points indicate the difference in levels of support for increasing policy funding between respondents who saw a rural individual profiled vs. an urban individual profiled (triangles), rural vs. suburban individual (circles), or suburban vs. urban individual (squares), with 95%-confidence intervals (thin lines) and 90%-confidence intervals (thick lines).

To assess these effects across all respondents subgroups simultaneously, we also examined whether the match between a respondent’s identity and the identity of the person profiled in the article had an effect on their policy support — essentially, aggregating across respondent subgroups to assess ingroup or outgroup favoritism for each attribute. These effects are plotted in Figure 6. Across all three manipulations, we see a positive effect of matching the identity of the substance user depicted in the news story on support for treatment spending. This ingroup bias in the formation of treatment spending policy preferences is largest for racial groups, but also present for residential context. We do not see similar ingroup favoritism effects for respondents’ support of the law enforcement spending policy. In fact, for gender identity, we see outgroup favoritism — respondents were more supportive of punitive policies that would affect members of their own gender identity group.

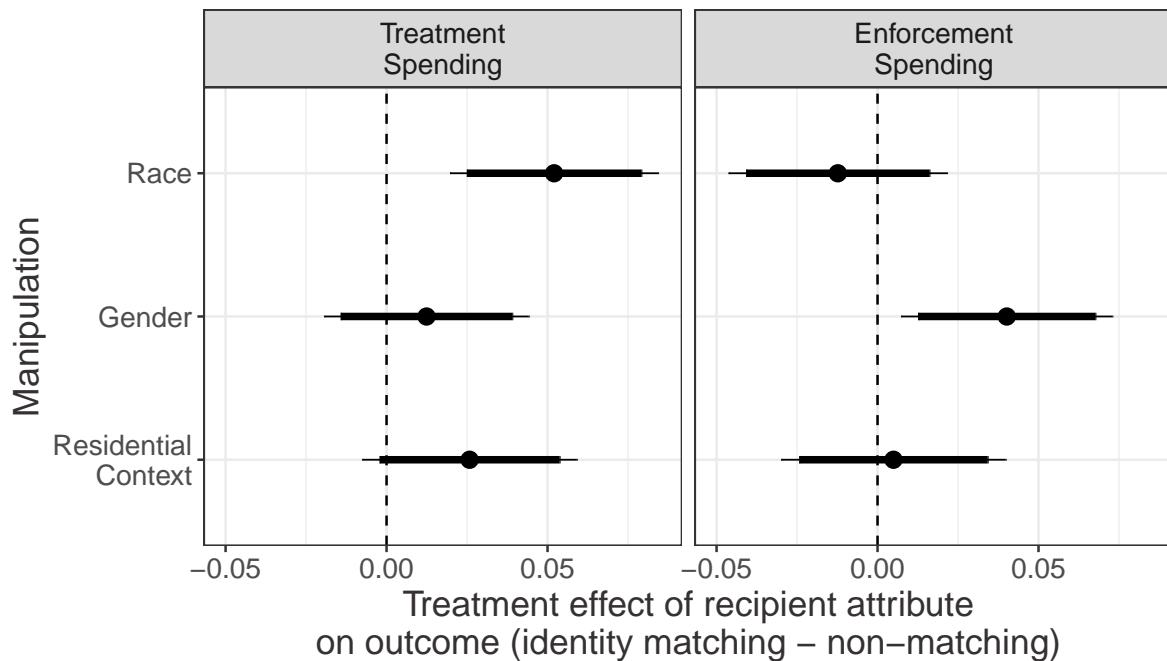


Figure 6: Treatment effects and confidence intervals for match between respondent characteristic and substance user attributes. Points indicate the difference in each policy outcome between respondents who matched the individual profiled and those who didn’t match them for each of the three identity attributes, with 95%-confidence intervals (thin lines) and 90%-confidence intervals (thick lines).

## Mechanisms

We next assess one potential mechanism behind our results, personal blame. To do so, we use the question on our survey asking respondents the degree to which they believed substance users like the one depicted in the story are to blame for their own drug addiction. Overall, 52 percent of respondents agreed with the statement that those addicted to opioids are to blame for their addiction. As might be expected, agreement with this attribution of blame was highly predictive of policy opinions. Those who agreed with the statement were 17 percentage points less likely to support treatment spending policy and 16 percentage points more likely to support law enforcement spending policy than those who did not think individuals were to blame.

To more formally test whether this perception of blame acts as a crucial causal mechanism behind the effect of group identity on policy opinions, we conducted causal mediation analyses (Imai, Keele, and Yamamoto, 2010; Imai et al., 2011).<sup>14</sup> Contrary to our hypotheses, however, none of the treatment effects associated with group identity were mediated by blame. We present these mediation analyses in Appendix G, which show no evidence that the treatment effect of a substance user's identity on support for policy funding is due to a change in the perceived personal responsibility of substance users.<sup>15</sup> This is despite the fact that the measure is predictive of policy opinions, and that we did observe variation on the measure itself between respondents.

The absence of blame as a mediator is surprising given the theoretic importance of perceived deservingness in support for social welfare policy (e.g. Gilens, 1999; Katz, 1989; Schneider and Ingram, 1993). Our results using an experimental manipulation of group identity cast doubt on previous observational evidence that argues this mechanism is a crucial underpinning of social policy opinions. Our results instead suggest that other unmeasured

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<sup>14</sup>Of course, conducting mediation analyses without randomizing the mediator in a parallel encouragement design (Imai et al., 2011) or setting values of the mediator (Acharya, Blackwell, and Sen, 2018) leaves some room for improved explorations of blame's mediating effects.

<sup>15</sup>In Appendix H and I we also use instrumental variables analyses to assess this potential mechanism.

mechanisms may be what lead people to have different policy opinions towards opioid policies. Of course, conceptual clarity on what exactly constitutes blame, and how it can be best operationalized in a survey, may be another reason that our evidence suggests this is not the mechanism behind our results. Blame could potentially be measured in an alternative way, such as with a more personalized question about a specific substance user's blame for their situation (e.g., Fang and Huber, 2019). Regardless of measurement strategy, however, our experimental evidence suggests that blame is not as broadly powerful a mechanism behind the construction of social policy opinions.

## Conclusion

Much of the political response to public health crises in the United States has changed between the 1980s and the present. While individual experiences may shape public opinion around these type of policies, public opinion may also be shaped by elite-level phenomena. In particular, the response to the opioid crisis may be a direct result of the changed media narratives surrounding the current opioid crisis. The substance users depicted in the media coverage of the current opioid crisis have been whiter and less urban than during past drug crises (Harbin, 2018; Netherland and Hansen, 2016), and the policy solutions discussed in this coverage have been more compassionate and health-oriented rather than punishment-oriented (Shachar et al., 2019). In turn, the actual policy response to the opioid crisis has mirrored this media coverage in its compassionate and medical nature (Kim, Morgan, and Nyhan, 2019).

In this paper we have provided the first comprehensive evidence of the direct effect of media depictions of substance users on public opinion about opioid policy solutions. Specifically, we have shown how personal identities of those suffering from opioid use disorder can provoke ingroup biases in policy support. Our findings suggest that, much as with other social policies, racial group prejudice may play a large role in the way that people form opinions

about both treatment- and punishment-focused opioid policies. People demonstrate ingroup biases towards members of their own racial group in their support for addiction treatment policy. Similarly, people exhibit ingroup biases toward substance users who are from the same type of residential locations as them , though with limitations. These empirical results lend credence to popular narratives about how the public images of the opioid crisis — that is, the people depicted in media stories about opioid substance use disorder — have influenced public opinion. At the same time, our results suggest that these identity-based policy responses may cut in both directions. People who are *less* prevalent in stories about the opioid crisis may not be as supportive of funding policies that address the crisis as the type of people who are more frequently depicted in these stories.

This type of response raises questions about who is represented in policy. As Cramer (2020) suggests, political elites – including the media – may perpetuate the racialization of public opinion. If white members of the public are more sympathetic to depictions of white people affected by the current drug overdose crisis, this alone may not hinder representation. However, if white *policymakers* show more sympathy towards, say, the needs of their white constituents — as our results suggest they may — it may marginalize certain groups in the policy solutions to the opioid crisis that these policymakers enact (Crenshaw, 1989). Moreover, this type of biased representation (e.g., Butler and Broockman, 2011) suggests the potential for compassionate medical policy responses to be less likely when minorities are disproportionately affected in other public health crises, such as COVID-19 (Garg, Kim, and Whitaker, 2020).

Our results have several important limitations. Not all people will, in the real world, read depictions of individuals suffering from substance use disorder in the media. Thus the types of effects we observe may have different effects when consumed in a real-world setting. Information, and in particular information about the opioid crisis, may have heterogeneous effects based on the preferences individuals hold for consuming said information (de Benedictis-Kessner et al., 2019; Testa, Moffitt, and Schenk, 2020). That said, the magni-

tude of our treatment effects — even if taken as a “treatment-on-treated” effect — indicate the large potential for broader public opinion changes due to exposure to a single media story about this issue. Our results suggest that other public information campaigns about addiction – such as South Dakota’s recent “Meth: We’re on it” advertising campaign (Zaveri, 2019) – may result in increased awareness, but their effect on policy opinions may be conditioned by the identities of those people depicted in the advertisements.

Additionally, though personal exposure to individuals with substance use may be one way that people learn about the effects of the opioid crisis, news media may be another way that people receive information about it. For the large sector of the population that is not directly affected by the crisis, the information conveyed in these media stories may be the most important consideration in the formation of their policy opinions.<sup>16</sup> Future research on health policy opinions, including those about the opioid crisis, should account not only for direct policy feedback effects on beneficiaries of these policies, but also for the indirect effects of these policies on the people who observe their consequences via either their daily lives or their media consumption.

Our evidence that mass opinion is subject to ingroup biases based on both race and residential location shows the centrality of group identity in policy opinions more generally. These dynamics in public opinion may help explain the broad consensus for policy responses to confront the opioid crisis (de Benedictis-Kessner and Hankinson, 2019). Yet these dynamics also highlight a potential fault in representation. Policies may subsequently be designed and targeted based on opinions favoring certain groups, and potentially lead to policymakers ignoring other groups (Gilens, 2012). We demonstrate that portrayal by the media of substance users influences public opinion in a way that may bias representation in policy responses to the opioid crisis. This mechanism may also lead to biases in health policy more generally — and public policy broadly. Policymakers should therefore be attentive to the

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<sup>16</sup>Analyses of the effects of group identity on policy opinions within subgroups of personal exposure to the crisis, however, suggest that even those who know someone struggling with addiction may still be influenced by these factors. We show these subgroup effects in Appendix J.

effect of media narratives on public opinion when creating policy if they wish to adhere to principles of democratic representation.

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## A Experimental Manipulations

*We varied the following attributes of the individual profiled in the news story, with full randomization that allowed each attribute to take one value with no restrictions based on other attribute values.*

1. **Race** - name and use of dark-skinned or light-skinned hand in photo. We use names from the lowest education quartile and highest education quartile within race (e.g., Gaddis, 2017) to mitigate any socio-economic effects outside of race.
  - Black woman - Lakisha (lowest quartile), Janae (highest quartile)
  - White woman - Angie, Katelyn
  - Black man - DaShawn, Darius
  - White man - Ronny, Jake
2. **Gender** - name and use of he/she pronouns
3. **Residential location**
  - a rural farm
  - a quiet suburb
  - an urban downtown center

**4. Pathway to addiction** - story of person varied according to below options, along with drug paraphernalia depicted in image (i.e. when story described a person who began their opioid use with OxyContin pills, the image showed a hand holding pills, whereas when the story described a person who began their opioid use with heroin, the image showed a needle).

- Injured his/her knee and needed surgery. His/her doctor prescribed him/her OxyContin pills for the pain during his/her recovery.
- His/her friend illegally gave him/her OxyContin pain pills at a party.
- His/her friend gave him/her heroin at a party.

**5. Pathway to insurance**

- insurance purchased from a private provider
- insurance purchased through the Affordable Care Act/Obamacare marketplace
- insurance coverage from the state's Medicaid expansion, funded by the Affordable Care Act/Obamacare

## B Survey Instrument

### Experimental Vignette

*The following replicates the introduction and news story all subjects read, with text varying according to the experimental condition. All gendered pronouns varied based on gender randomization, but example uses female pro-nouns for clarity.*

We are interested in learning what people can remember from what they read in news articles. We would now like you to read a news article, and then answer some questions about it. You will find the article on the next page. Please read it carefully before answering the following questions.

There will be a brief pause on the next screen so you can read the story. At the end of the pause, an arrow will appear at the bottom of the screen.

Once the arrow appears, you may move on to the next screen of the survey by clicking on the arrow.

#### PHOTO OF HAND HOLDING DRUG PARAPHERNALIA (See Section C for photos.)

*NAME, holding the drugs that started her addiction.*

NAME is a resident of CONTEXT and a recovering opioid addict who has witnessed the disturbing, dark side of addiction.

Growing up, NAME had what appeared to be a bright future ahead of her. But after high school, NAME got her first taste of the drug that would come to rule over her life. PATHWAY.

"It was instant love," she said. "That was the first time I got that opioid feeling, and I really liked the way it felt."

Her life started to go downhill, quickly. While most of the people she grew up with were graduating from college or getting their first big job, she was doing whatever she had to do to get high. After her first introduction to opioids, she started buying the drugs illegally from people she knew were selling in her town. To pay for these drugs, she did things she now says she regrets given the toll they took on her life. Over the past four years, NAME overdosed twice. Both times she was found by friends or family members and revived by paramedics or in the hospital.

"About a year ago, I just finally had enough and hit a point where either I stopped or I was going to die and not come back this time," she said. NAME is now in outpatient rehab. She is thankful for her INSURANCE. Otherwise, she would not be able to afford treatment and could not begin her journey to recovery.

"I just hope people will hear my story and realize there is a way out. You just have to want it. The disease may not have been my responsibility, but the recovery is 100 percent my responsibility," she said.

## Outcome Variables

*We randomize the order of questions 1 and 2 ("treatment" and "law enforcement to arrest and prosecute").*

Now, we would like to know your opinion about opioid treatment programs.

1. If you were making up the budget for the federal government this year, would you increase, decrease, or keep spending the same for treatment for those addicted to opioids?
  - Increase a lot
  - Increase a little
  - Keep the same
  - Decrease a little
  - Decrease a lot
  
2. If you were making up the budget for the federal government this year, would you increase, decrease, or keep spending the same for law enforcement to arrest and prosecute those addicted to opioids?
  - Increase a lot
  - Increase a little
  - Keep the same
  - Decrease a little
  - Decrease a lot
  
3. Would you agree or disagree that individuals addicted to opioids are to blame for their own addiction?
  - Strongly agree

- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Strongly disagree

## Manipulation Checks

*Due to sampling constraints, two of the five manipulation checks were randomly selected for each respondent to answer.*

Next, we are going to ask you a few questions about the individual profiled in the news article you read about opioid addiction.

- What was the race of the individual profiled in the news article?
  - Asian
  - Black
  - Hispanic
  - White
- What was the gender of the individual profiled in the news article?
  - Male
  - Female
- In which type of community did the individual profiled live?
  - A rural farm
  - A quiet suburb
  - An urban downtown center
- How did the individual profiled become addicted to opioids?
  - Injured his/her knee and needed surgery. His/her doctor prescribed him/her OxyContin pills for the pain during his/her recovery.
  - His/her friend illegally gave him/her OxyContin pain pills at a party.
  - His/her friend gave him/her heroin at a party.
- What type of insurance did the individual profiled have?
  - Insurance purchased from a private provider
  - Insurance purchased through the Affordable Care Act/Obamacare marketplace
  - Insurance coverage from their state's Medicaid expansion, funded by the Affordable Care Act/Obamacare

## Demographic Variables

*We collect demographic data on race, gender, ideology, partisanship, homeownership, age, and ZIP code from NORC panel variables. We will also include a question on respondents' personal exposure to individuals struggling with addiction:*

- Do you personally know anyone who has ever been addicted to opioids, including prescription painkillers or heroin? Please select all that apply.
  - Yes, me
  - Yes, a family member
  - Yes, a close friend
  - Yes, an acquaintance
  - No, I do not know anyone who has ever been addicted to opioids

## C Photos from Experiment



(a) Female/Black/Pills



(b) Female/Black/Needle



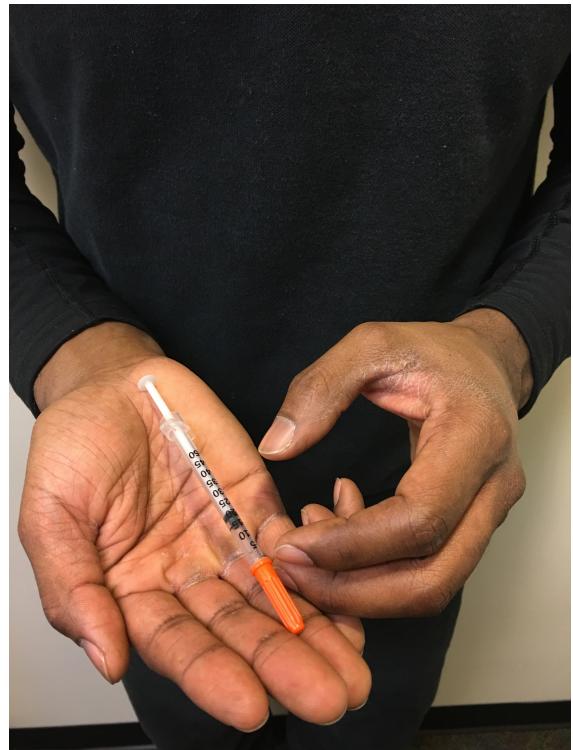
(c) Female/White/Pills



(d) Female/White/Needle



(e) Male/Black/Pills



(f) Male/Black/Needle



(g) Male/White/Pills



(h) Male/White/Needle

## D Results from Manipulation Checks

In Figure D-7 we present the treatment effect of varying attributes on the proportion of respondents answering the manipulation check question in line with that treatment. Each point plots this treatment effects for a different attribute along with its 95% confidence interval. Each attribute that we varied greatly increased the proportion of respondents answering that option on the manipulation check question, and all treatment effects were statistically significant. For instance, respondents in the ‘black’ treatment group were 56 percentage points more likely to answer that the person profiled in the article they read was black than respondents in the ‘white’ treatment group ( $p < 0.01$ ), as plotted with the left-most point. All other treatments had similarly large and statistically significant effects on our manipulation check questions, indicating that our experimental manipulations were conveying the information we hoped to convey.

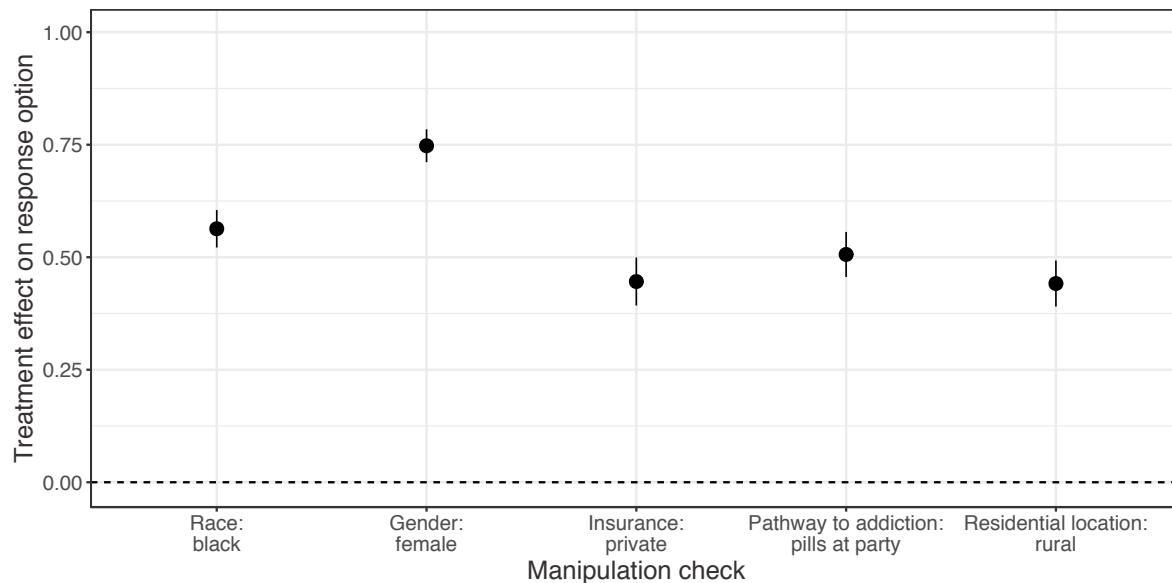


Figure D-7: Pilot study manipulation check by experimental attribute. Points indicate the percent of respondents correctly recalling the attributes of the individual profiled.

## E Descriptive Characteristics of Survey Respondents

As described in the main text of the manuscript, NORC drew a stratified probability sample from their AmeriSpeak Panel to invite to participate in our survey. The survey was in the field from June 16 to July 11, 2019, during which period NORC sent 5 reminder emails and one SMS reminder. Panelists were offered the cash equivalent of \$1 to complete the survey via NORC’s points incentive system. The median respondent took 3 minutes to complete the survey. The weighted AAPOR RR3 response rate was 30.3%.

Below, we present descriptive statistics of interest for our full sample of survey respondents.

Table E-1: Sample Descriptive Statistics

Statistic	Mean	St. Dev.	Median	Min	Max	N
Female	0.51	0.50	1	0	1	3,112
White	0.65	0.48	1	0	1	3,112
Black	0.12	0.33	0	0	1	3,112
Age	48.06	17.04	47	18	92	3,112
Homeowner	0.64	0.48	1	0	1	3,112
Urban location	0.25	0.43	0	0	1	3,112
Suburban location	0.58	0.49	1	0	1	3,112
Rural location	0.17	0.37	0	0	1	3,112
Personal exposure	0.59	0.49	1	0	1	3,112

## F Results Using Alternative Coding of DV

In this section, we replicate the main results presented in Figure 2 with an alternative coding of the dependent variable from 0 to 1 rather than the binary measure presented in the main text. These alternative results, presented below in Figure F-8, are largely similar to those presented in the text of the paper.

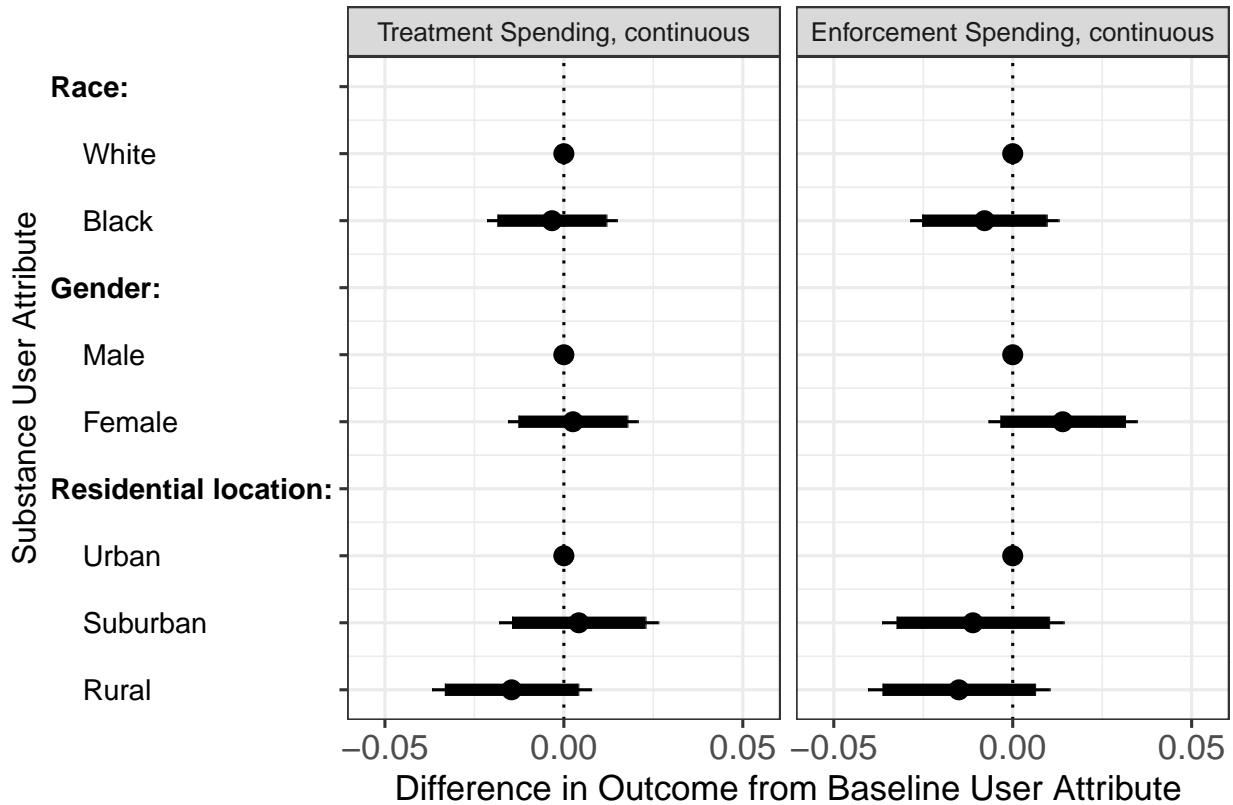


Figure F-8: Treatment effects and confidence intervals among all respondents. Points are regression coefficients and indicate the difference in levels of policy support between respondents in the baseline level condition (no confidence interval) compared to respondents in conditions with all other attribute levels. Lines indicate 95%-confidence intervals (thin lines) and 90%-confidence intervals (thick lines).

## G Mediation Analyses

In this section, we conduct mediation analyses (Imai et al., 2011) to assess the causal mediation of our experimental effects by respondents' perceptions of substance users' blame for their situations. The figures below present the average direct effects (ADEs) of our experimental manipulations, the average causal mediation effects (ACMEs) of perceived blame, and the total (combined) effects. As indicated by the null ACMEs across our different identity manipulations and respondent subgroups, perceptions of blame did not play a causally mediating role in our observed treatment effects.

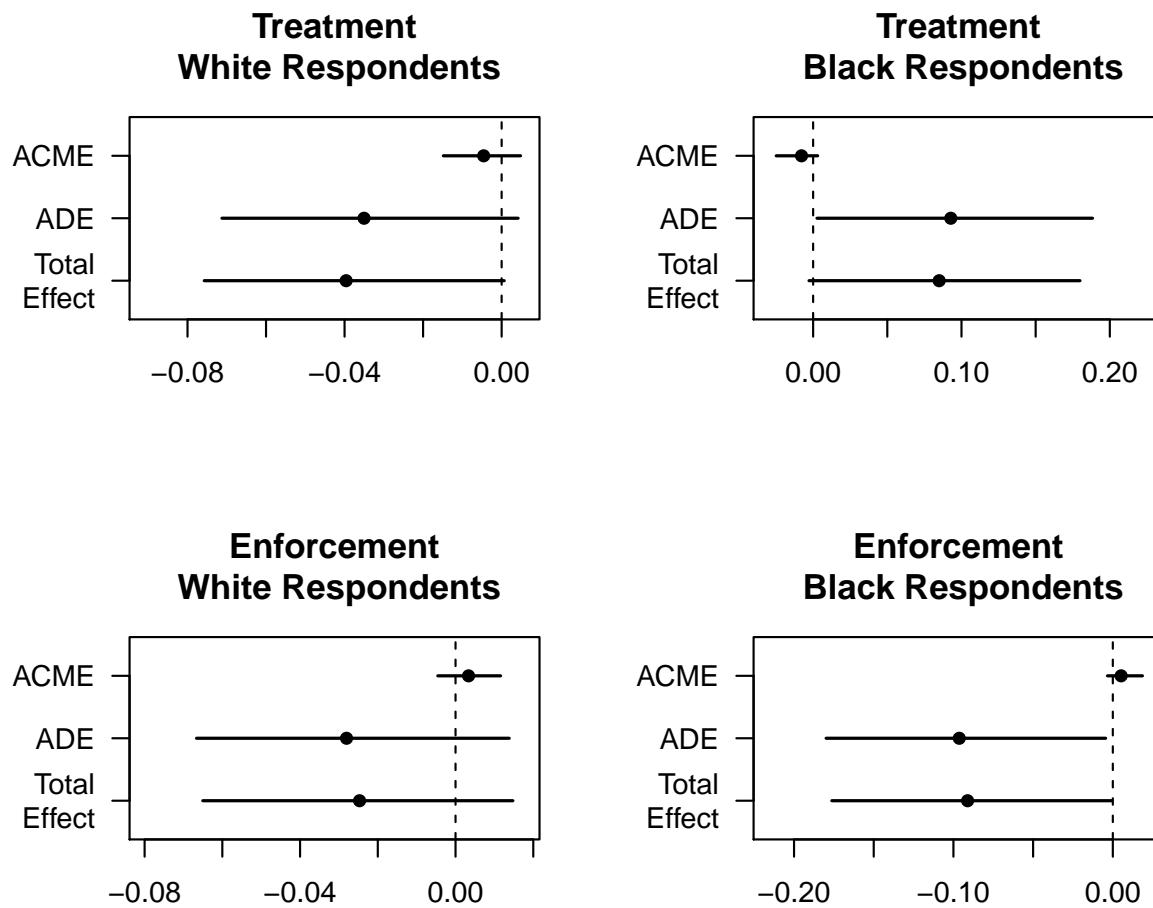


Figure G-9: Treatment effects and confidence intervals by respondent race. Points indicate the difference in levels of support for increasing policy funding between respondents who saw a black substance user profiled and those who saw a white substance user profiled, with 95%-confidence intervals. Total Effect represents a composition of the Average Direct Effect (ADE) and the Average Causal Mediation Effect (ACME).

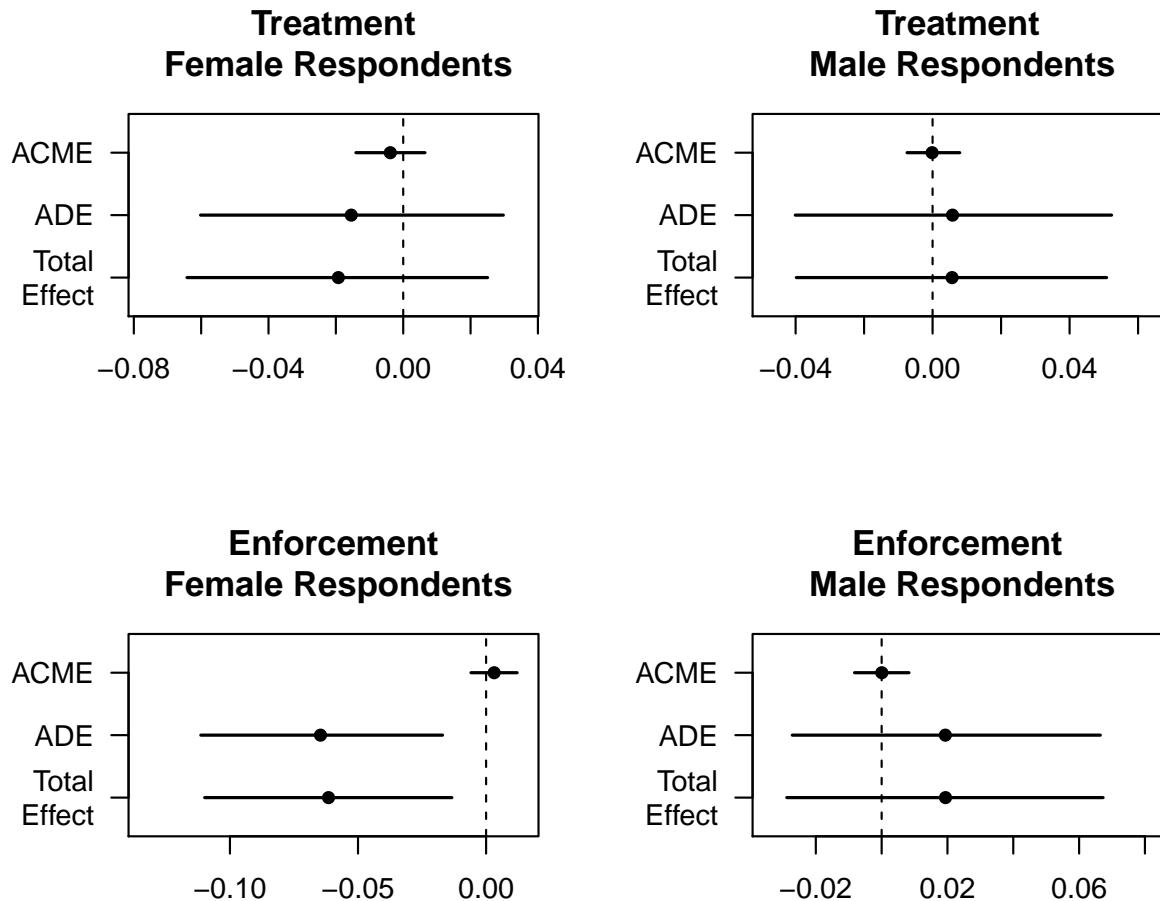


Figure G-10: Treatment effects and confidence intervals by respondent gender. Points indicate the difference in levels of support for increasing policy funding between respondents who saw a female substance user profiled and those who saw a male substance user profiled, with 95%-confidence intervals. Total Effect represents a composition of the Average Direct Effect (ADE) and the Average Causal Mediation Effect (ACME).

## H Additional Mechanism Tests: Omnibus IV Analyses

In addition to the results in the main manuscript using mediation analyses, in this section we also use our experimental manipulations as an instrument for blame to examine the potential mechanism of blame.

To do so, we use instrumental variables analysis to assess how our experimental manipulations affected respondents' perceptions of blame for those with addiction, and how that instrumental variation in blame affected policy opinions. The assumptions underlying the use of instrumental variables (IV) as a way to test mechanisms are twofold. First, use of IV requires assuming relevance of the instrument — that the instrument has a sufficiently large effect on the independent variable of interest (in this case, perceptions of individual blame). We find that this assumption is not plausible. A regression of respondents' perceptions of blame on all three experimental manipulations (i.e. race, gender, and residential context) yields an  $F$ -statistic of 2.43 for the full sample. This suggests that our experimental manipulations of the identity of substance users did *not* affect perceptions of blame to a substantively significant degree. This contrasts with theoretical explanations of social policy preferences that depend on such a mechanism.

Instrumental variables analysis also requires that the exclusion restriction holds: that is, that the instrument does not affect the potential outcomes via any other pathway than the main independent variable. This assumption is satisfied because the instruments in this case are completely exogenous: they are experimentally manipulated and assigned at random.

Despite the fact that one of the basic tenets of IV analysis does not hold (specifically, that of relevance of the instrument), we conducted these analyses to test whether our experimental manipulations affected our outcome variables via this mechanism. The results of these analyses are presented in Table H-2 for blame as instrumented by all three experimental manipulations, with the treatment spending policy outcome in the first column and the law enforcement spending policy outcome in the second column.

Table H-2: Perceptions of Individual Blame Instrumented via Experimental Manipulations Influence Policy Opinions

	<i>Dependent variable:</i>	
	Treatment Spending	Enforcement Spending
	(1)	(2)
Individual Blame	1.357*** (0.036)	0.591*** (0.020)
Observations	3,077	3,085
R <sup>2</sup>	-2.851	-0.181

*Note:*

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Results supporting this mechanism as a result of our group identity manipulations are consistent across both outcome variables. As shown in columns 1 and 2 of Table H-2, the

causal effect of perceptions of blame as instrumented by our experimental manipulations is positive and statistically significant. Respondents who viewed individuals as more to blame for their own addiction were more likely to support policies increasing treatment spending and more likely to support policies increasing law enforcement spending.<sup>17</sup> This test of the mechanism behind the effect of group identity on policy opinions suggests that when perceptions of individual blame are higher, people are more likely to support policies to address addiction. Interestingly, this finding holds for both treatment spending policy and law enforcement policy – showing that people’s punitive policy opinions may be shaped in similar ways to their views on more beneficent policies.

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<sup>17</sup>These results for the influence of perceptions of blame on policy opinions are similar when using our individual experimental manipulations as instruments, which we show in Appendix I.

# I Additional Mechanism Tests: IV Analyses Each Experimental Manipulation

In this section, we present the impact of individual blame on policy opinions using each individual experimental manipulation separately. In Table I-3, we use the race of the individual profiled in the news article as an instrument, showing effects on respondents' support for treatment spending in columns 1-3, and support for enforcement spending in columns 4-6, broken down by the full sample (columns 1 and 4), the subset of black respondents (columns 2 and 5), and the subset of white respondents (columns 3 and 6). In Table I-4 we show similar results for the gender identity manipulation and among respondent gender subgroups, and in Table I-5 for the residential location manipulation and among respondent residential context subgroups.<sup>18</sup>

Table I-3: Perceptions of Individual Blame Instrumented via Racial Identity Influence Policy Opinions

<i>Dependent variable:</i>						
	Treatment Spending			Enforcement Spending		
	Full Sample	Black Respondents	White Respondents	Full Sample	Black Respondents	White Respondents
	(1)	(2)	(3)	(4)	(5)	(6)
Individual Blame	1.330*** (0.041)	1.378*** (0.119)	1.320*** (0.051)	0.583*** (0.024)	0.411*** (0.067)	0.563*** (0.029)
Observations	3,077	379	1,989	3,085	377	1,996
R <sup>2</sup>	-2.750	-2.593	-2.957	-0.173	-0.165	-0.137

Note:

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

Table I-4: Perceptions of Individual Blame Instrumented via Gender Identity Influence Policy Opinions

<i>Dependent variable:</i>						
	Treatment Spending			Enforcement Spending		
	Full Sample	Male Respondents	Female Respondents	Full Sample	Male Respondents	Female Respondents
	(1)	(2)	(3)	(4)	(5)	(6)
Individual Blame	1.347*** (0.042)	1.294*** (0.054)	1.407*** (0.066)	0.580*** (0.024)	0.562*** (0.032)	0.600*** (0.037)
Observations	3,077	1,507	1,570	3,085	1,517	1,568
R <sup>2</sup>	-2.814	-2.505	-3.139	-0.171	-0.164	-0.177

Note:

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

<sup>18</sup>We similarly assess relevance for each manipulation as an instrument, though this assumption is dubious for our race and gender experimental manipulations and suggestive for our residential context manipulation. A regression of respondents' perceptions of blame on the race condition yields an *F*-statistic of 1.61 for the full sample, 2.38 for the sample of black respondents, and 0.96 for the sample of white respondents. A regression of blame on the gender manipulation yields an *F*-statistic of 0.49 for the full sample, and a regression on the residential context manipulation yields an *F*-statistic of 5.27 for the full sample.

Table I-5: Perceptions of Individual Blame Instrumented via Residential Identity Influence Policy Opinions

	Dependent variable:							
	Treatment Spending				Enforcement Spending			
	Full Sample	Urban Respondents	Suburban Respondents	Rural Respondents	Full Sample	Urban Respondents	Suburban Respondents	Rural Respondents
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Individual Blame	1.466*** (0.059)	1.609*** (0.135)	1.481*** (0.078)	1.253*** (0.113)	0.644*** (0.033)	0.652*** (0.072)	0.636*** (0.043)	0.657*** (0.071)
Observations	3,077	767	1,789	521	3,085	769	1,793	523
R <sup>2</sup>	-3.286	-3.928	-3.355	-2.399	-0.238	-0.333	-0.232	-0.177

Note:

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

## J Heterogeneity in the Effects of Group Identity by Personal Exposure

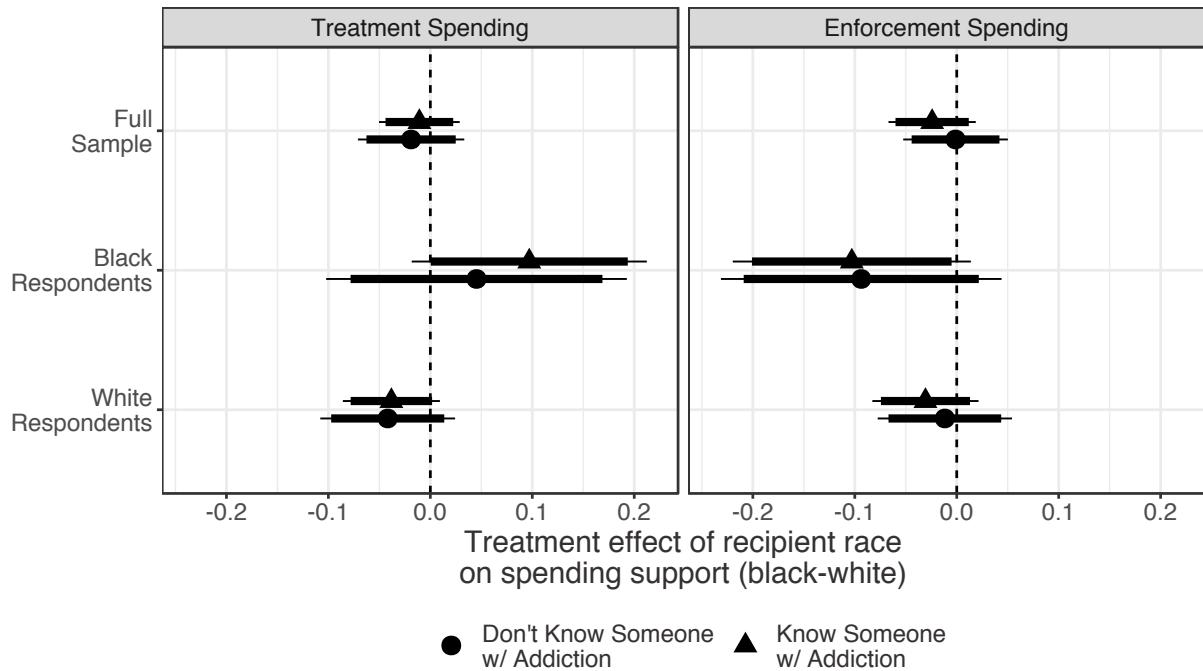


Figure J-11: Treatment effects and confidence intervals by respondent race and personal exposure to addiction. Points indicate the difference in levels of support for increasing policy funding between respondents who saw a black individual profiled and a white individual profiled, with 95%-confidence intervals (thin lines) and 90%-confidence intervals (thick lines). Filled circles indicate treatment effects among respondents who reported knowing someone with opioid addiction issues, and triangles indicate those respondents who reported not knowing anyone struggling with addiction.

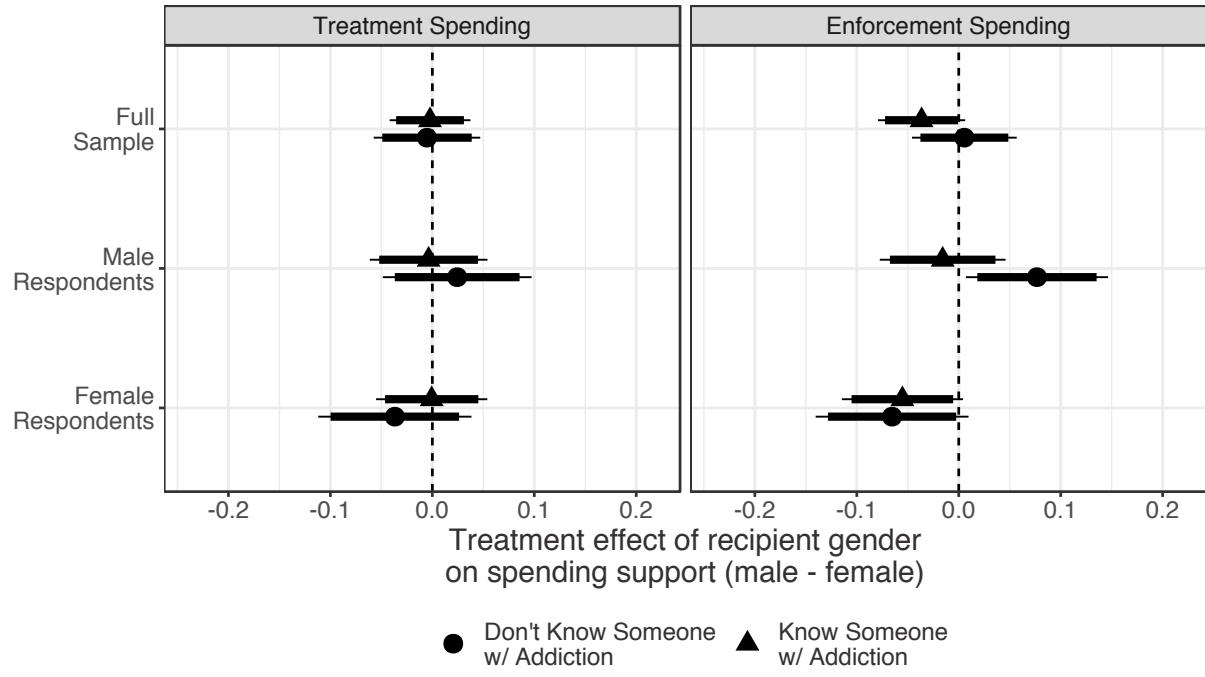


Figure J-12: Treatment effects and confidence intervals by respondent gender. Points indicate the difference in levels of support for increasing policy funding between respondents who saw a male substance user profiled and those who saw a female substance user profiled, with 95%-confidence intervals (thin lines) and 90%-confidence intervals (thick lines). Filled circles indicate treatment effects among respondents who reported knowing someone with opioid addiction issues, and triangles indicate those respondents who reported not knowing anyone struggling with addiction.