

How and Why the Identity of Substance Users Shapes Public Opinion on Opioid 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 vignette experiment fielded on a high-quality nationally-representative survey sample, we show that the racial identity of substance users depicted in a news story shapes public opinion on policies to address the opioid overdose crisis. People display biases in favor of members of their own racial identity group that manifest in their support of treatment-based policies. However, racial identity-based biases are less uniform in attitudes towards punitive policies to address the opioid crisis. We show that these biases are unlikely to be explained by the common theoretic mechanism of differential perceived blame. Similar ingroup preferences are not observed for gender or residential context. These results highlight the continued centrality of race in the formation of public policy preferences.

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

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Each day, more than 200 Americans die from a drug overdose, making overdose the leading cause of death for Americans under age 45 (Woolf, Chapman, and Lee, 2021). Amidst the ongoing COVID-19 public health crisis, these deaths have only accelerated (CDC, 2020). The rise in overdoses has been driven by the use of opioids, and in particular synthetic opioids such as fentanyl: nearly three-quarters of overdoses in 2020 involved opioids (Baumgartner and Radley, 2021). 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 (Kolodny et al., 2015; 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, 2020).

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; Monnat, 2018). In contrast, previous drug crises — such as the crack epidemic of the 1980s — affected largely non-white 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 users may be what has caused public opinion and subsequently public policy to support treatment rather than punishment much more than during past drug crises. Past research has shown that associating racial

minorities with other policies — from welfare, to the Affordable Care Act (ACA), to gun ownership — may cause white Americans to oppose those policies (e.g., Gilens, 1996, 1999; Hayes, Fortunato, and Hibbing, 2020; Tesler, 2012). The whiter media narrative surrounding the opioid crisis could, in an opposite effect, drive members of the public to support compassionate opioid treatment policies. More broadly, the racial identities and other group identities of substance users depicted in the media may have shaped people’s largely supportive attitudes towards policy responses. 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 paper, 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.¹ 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 potential policy beneficiaries. We manipulate the racial identity, gender, and residential location of opioid users depicted in a media story to examine how these identities shape support for both treatment-based and punitive policy. Moreover, we test one mechanism behind these effects on policy opinions advanced by other theories of social policy: the perceptions of individual blame for addiction.

Our results highlight the continued primacy of race in shaping public support for targeted social policies. We show that people increase their support for treatment-based policy and decrease their support for punitive policy when they are shown stories of substance users who share their own racial identity. We test for whether group identities beyond race — gender

¹The pre-analysis plan for this study was registered at EGAP prior to data collection (# 20190515AD) and is included in Supplementary Material 11. The study was conducted in compliance with relevant laws and the research design was approved by the Harvard University IRB (# IRB20-1355).

and geography, two increasingly salient political cleavages in American politics — have the potential to also influence the public’s support for policy. Yet the effects of these other group identities pale in comparison to the effect of race, suggesting that public opinion surrounding the opioid crisis is highly racialized but not shaped by other group identities in ways suggested by some popular media accounts. Finally, we test a commonly believed mechanism for the relationship between group identity and resource allocation: the perceived deservingness of policy recipients. Although we find that blame is strongly correlated with treatment policy support, we do not find evidence that blame mediates the relationship between group identity and policy support. These findings cause us to question the theoretical dominance of deservingness undergirding social policy attitudes, especially given the salience and variation in perceived blame underlying the opioid epidemic.

Together, these results demonstrate how and why media depictions of the people affected by specific policies may shift public opinion. In the case of the ongoing opioid crisis, our results suggest that the racial identities of those with substance use disorder depicted in the media have helped drive public opinion and the political motivation for action by policymakers. However, our findings also present a normatively troubling possibility for policy representation. The portrayal of the opioid crisis as predominantly affecting white populations may increase policy support among white constituents and policymakers. Yet our findings also suggest that health crises disproportionately affecting communities of color — such as COVID-19 — may be less likely to receive support for compassionate medical policy if the media portrays them as accurately having such disproportionate impacts.

This paper proceeds as follows. First, we briefly introduce our theory of how group identity may shape opinion surrounding public policy and our expectations — as well as potential mechanisms for these effects. Next, we outline 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

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 and the risk of unequal responsiveness.

Theory and Hypotheses

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), as well as people from backgrounds outside of urban environments (Netherland and Hansen, 2016). The language in such media portrayals has also highlighted medical policy responses rather than criminal justice policy responses to the crisis (Shachar et al., 2020). The identities of the people and the language used in these stories may be one reason support for opioid treatment policies is so high. Specifically, both popular media and research studies have claimed that ‘whiteness’ is driving national attention to the current epidemic (Om, 2018; Netherland and Hansen, 2016). *Consequently, we expect that our nationally-representative sample, as a whole, will be less supportive of funding addiction treatment programs after reading about a black policy beneficiary compared to a white policy beneficiary (H1).*

Our study also explores group attachments and identity beyond the effect of race on the average American. While a large body of research suggests that racial group identity is influential in the formation of people’s policy preferences, other (often intersecting) group identities of people may also shape attitudes (Nelson and Kinder, 1996). Here, we advance a theory that incorporates the potential for multiple types of group identity – both relatively immutable group characteristics and group traits less commonly thought of as structuring social preferences – to shape policy preferences to differing degrees. Moreover, our theory incorporates a differential role for group identity in shaping people’s support for policies that are beneficial, on the one hand, or punitive, on the other hand.

Within the United States, racial identity often provides a foundational group attachment that structures policy attitudes (Hutchings and Valentino, 2004). People's racial biases are likely to be activated when political communication associates public policies with certain racial groups (Gilens, 1999; Winter, 2008). For example, when white Americans believe that policies will target benefits to Black people – not necessarily in an accurate reflection of reality – 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; Jengelley and Clawson, 2019; 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). Black Americans also express positive support for social programs benefiting ingroup members, though this support may weaken when the issue is linked to a marginalized subset of the ingroup (White, 2007). This literature leads us to expect that respondents will be more sympathetic to policy beneficiaries when they share a racial identity. *Specifically, white respondents will report higher levels of support for opioid treatment funding when white substance users are depicted in the media, compared to Black substance users and vice versa (H2a).*

The group attachments that influence support for public policies may be especially broad in the case of policies to address opioid use given the unusual context of the opioid crisis, making this issue area an excellent test of how group identities other than race can shape attitudes. For example, while heroin and non-medical prescription opioid use is greater among men, the rate of use is growing faster among women (Marsh et al., 2018). Moreover, women have historically been more stigmatized for drug use, especially for opioid use given the impression of pregnant women bearing “addicted babies” (Gomberg, 1982). This gendered perception of drug use may strengthen the salience of gender identity on opioid-related policy, increasing ingroup sympathy among women while men maintain the negative view of female drug use. More broadly, female politicians and members of the public tend to support

social policies that target women (e.g. Holman, 2014; Strolovitch, 2008). *We therefore expect both male and female respondents will be more supportive of treatment funding when viewing substance users who match their gender (H2b).*

Especially unusual about the opioid crisis is its geographic context, 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 (Monnat and Rigg, 2016). Americans 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 (Nemerever and Rogers, 2020). 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). Despite geographic identity being more malleable than race or gender, respondents may be more supportive of policy that will potentially benefit people who come from a similar residential context (Lyons and Utych, 2021). This may be true even without conscious attention to associate with people from a similar geographic context, as research in psychology has long demonstrated the role of minimal group attachments in structuring attitudes and behaviors (Tajfel et al., 1971). *We expect respondents will be more supportive of treatment funding when viewing substance users who share their residential context (H2c).*

Much of the literature on the role of group identity in shaping policy preferences has focused on *beneficial* policies that would confer positive benefits on people of certain identity groups. Other social policies do not directly benefit those who interact with them. Policies proposed to address illicit drug use — such as the opioid crisis — are responses to an illegal behavior, and so many policy response options involve more *punitive* policies instead. Such policies, including law enforcement responses, often affect members of different groups in disparate ways similarly to how beneficial policies do so (e.g., Beckett, Nyrop, and Pfingst, 2006). Opinions about such punitive policies may also be structured by group identities. If the punitive policy is viewed as a threat to members of one's ingroup, it could lead to re-

spondents opposing the policy (Klar, 2013). Conversely, if the policy is perceived as helping to maintain ingroup norms by punishing deviant behavior (i.e., a “black sheep effect”), respondents may respond positively to a shared identity with the affected individual (Marques and Paez, 1994).

In particular, white Americans may be more supportive of punitive policies that will impact Black people due to outgroup biases (Hurwitz and Peffley, 2005b). In contrast, Black Americans may be opposed to punitive policies when the target of enforcement is a racial ingroup member. Historic racial bias in the enforcement and sentencing of drug offenses during the crack epidemic likely informs many Black Americans’ perceptions of law enforcement as unfair (Bobo and Johnson, 2004). This history could discourage support for law enforcement policy responses when the policy recipient is Black. This dynamic is also visible in public opinion data showing Black Americans as more willing to allocate resources to lowering crime rates than white Americans — likely due in part to their higher probability of being victims of crime — but also showing greater concern over police violence and punishment being too harsh (Eckhouse, 2019). 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, 2017; Jefferson, 2019). *Still, we expect both white and Black respondents to show less support for funding punitive policy when reading a profile of a substance user from their racial ingroup (H3a).*

The role of gender and geographic group identities in support for punitive policies has weaker theoretical and empirical foundation on which to build our theory. In light of this, shared gender and geographic context identities may shape support for funding law enforcement much in the reverse of how they shape support for funding treatment policy. *We expect that people will be less supportive of punitive policy when they see that it will target people who share a gender identity (H3b) or geographic context identity with them (H3c).*

The mechanism behind such ingroup biases in people’s policy preferences is also less clearly informed by previous research. We argue that group identity shapes opioid policy

opinions through people's perceptions of 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, 2020; 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).² 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. *We therefore expect people's perceptions of blame to negatively correlate with their support for funding treatment policy and positively correlate with support for funding punitive policy (H4).* This in turn allows us to test the role of blame in driving attitudes towards policy through a mediation analysis (Imai, Keele, and Yamamoto, 2010; Imai et al., 2011). *We expect that blame will mediate people's support for policies that are both beneficial and*

²The 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, 2020). Though we do not assess this mechanism here, perceptions of loser status may be another pathway through which policy opinions are formed.

punitive (H_5).

Research Design and Data

To test these hypotheses, we use a vignette-style factorial randomized survey experiment that 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 actual published news articles. 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.³ The research design, protocols, hypotheses, and analyses were pre-registered at EGAP prior to data collection.

We varied the racial identity of policy recipients to be either non-Hispanic whites or African-Americans because of the historic and continued dichotomy of how the media covers drug use in these communities (Lassiter, 2015; Netherland and Hansen, 2016).⁴ 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) — a depiction of substance users that is exceptionally common in articles about substance abuse. Examples of two of these photos, varying by race, are shown in Figure 1, and all photos that we used are presented in Supplementary

³All experimentally varied attributes and levels of each attribute are described in Supplementary Material 1.

⁴This decision may limit the applicability of our findings to Latinos and Asian-Americans, whose group identities are multidimensional, prone to be based on national-origin and immigration status as well as ethnicity/race (Masuoka and Junn, 2013).

Material 3. We also varied the person's name between one commonly attributed either to non-Hispanic whites or to African-Americans (Gaddis, 2017).⁵



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

We varied other group identity attributes of the person depicted in the news story in simpler ways.⁶ 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.⁷

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

⁵To 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.

⁶Though not examined in this paper, our experimental design also included two manipulations unrelated to group identity: how the substance user received treatment for their addiction and how the substance user began using opioids. Results from these manipulations are discussed in other work.

⁷Following 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 Supplementary Material 2). 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 Supplementary Material 4.

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 “increase a lot,” “increase a little,” “keep the same,” “decrease a little,” and “decrease a lot.”⁸ 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.⁹ 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,

⁸Full wording of all survey questions is in Supplementary Material 2.

⁹We code residential location as either ‘urban,’ ‘suburban,’ or ‘rural’ based on the population density classifications described by Kolko (2015).

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 Supplementary Material 5.

Results

We first analyze the treatment effects of each of our identity attribute manipulations across the entire survey sample. 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 code our main outcome variables, respondents’ desired increase or decrease in spending, as a continuous interval of support that takes a value of 1 if respondents strongly agree to increase funding and a value of 0 if they strongly disagree. For the mediation analysis, we similarly recode our outcome of individual blame with a value of 1 if respondents strongly agree that those struggling with addiction are to blame for their own addiction and a value of 0 if they strong disagree.¹⁰

Figure 2 plots our treatment effects of each attribute level among the full sample of respondents on our measure of support for treatment funding and law enforcement funding, 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. Contrary to *H1*, respondents who read the news story about a substance user who was Black were no

¹⁰Results are nearly identical when using binary coding of the outcome scales rather than the continuous interval coding of the dependent variables (Supplementary Material 6).

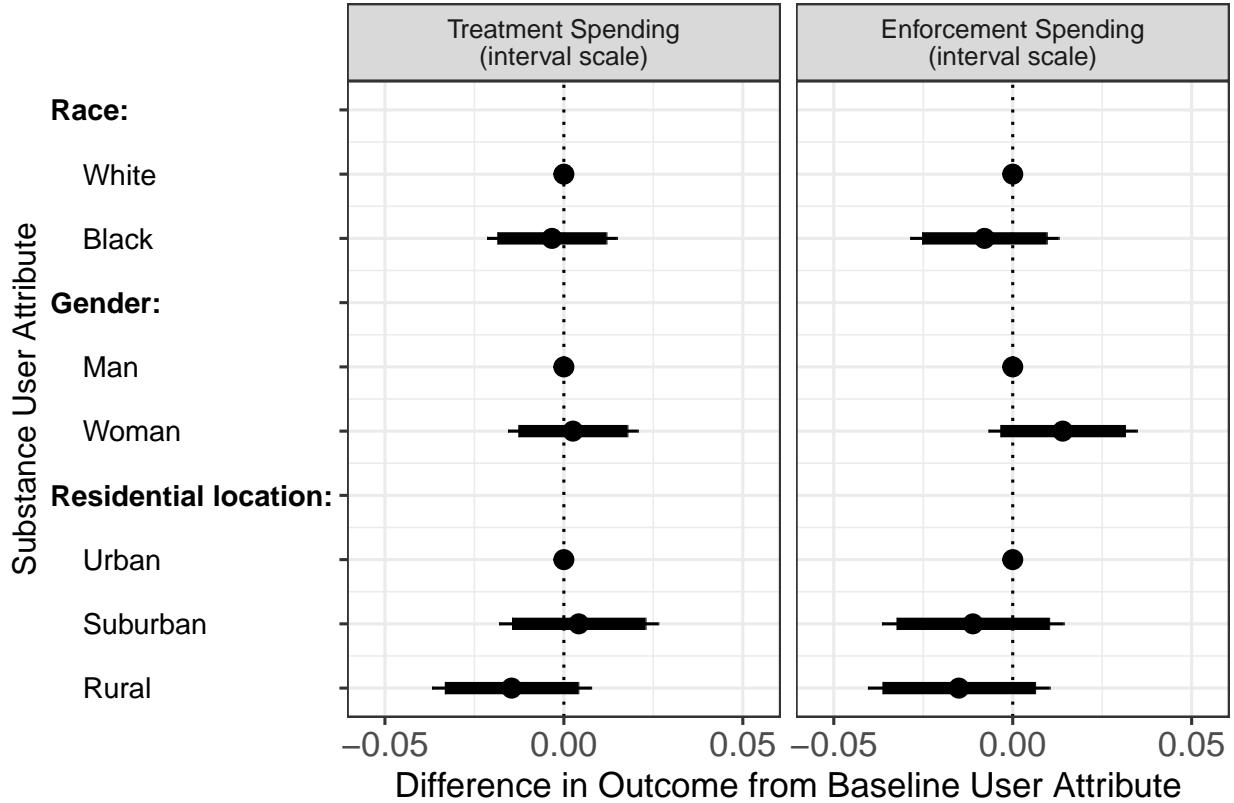


Figure 2: Treatment effects and confidence intervals among all respondents on unit scale interval outcome. Points are regression coefficients and indicate the difference in levels of policy support between respondents in the baseline level condition (no confidence interval) compared to respondents in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

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 treatment 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 1 percentage points less supportive of funding than those who read about an urban substance user.¹¹ None of these differences

¹¹Respondents who read about a suburban substance user did not report support for treatment funding

were statistically significant among our full sample of survey respondents. The null effects of identity 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' 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.¹² 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.

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 respondents' 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 4 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 2 percentage points less supportive of a funding increase than those in

that was statistically distinguishable from those who read about a rural substance user ($\beta = 2$ percentage points).

¹²All conditional treatment effects are simply subgroup differences in the causal effects of our attribute manipulations, and do not necessarily represent *causal* differences of these respondent characteristics (Kam and Trussler, 2017).

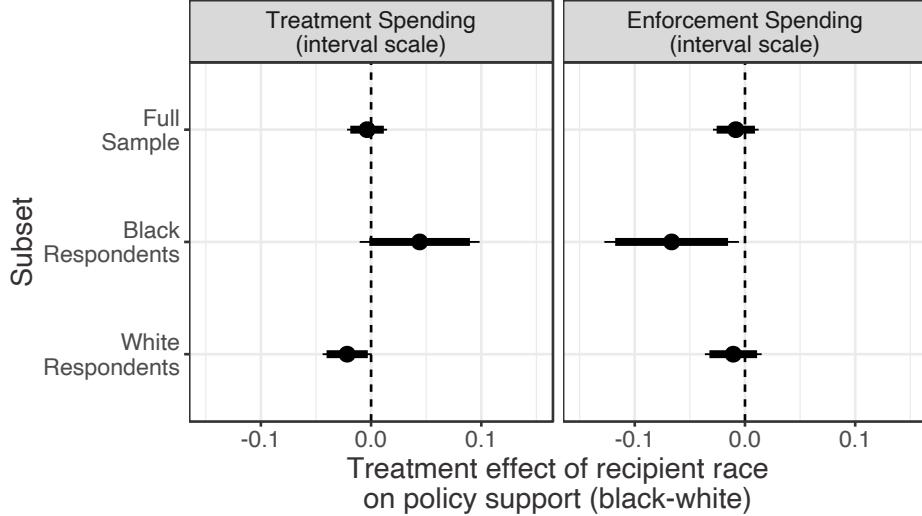


Figure 3: Treatment effects and confidence intervals by respondent race on unit scale interval outcome. Points indicate the difference in policy support between respondents who saw a Black individual profiled and a white individual profiled, with 95%-confidence intervals (thin lines) and 90%-confidence intervals (thick lines).

the condition depicting a white substance user. The difference of 7 percentage points between these effects, as measured by the interaction between the experimental manipulation and respondents' race, is statistically significant ($p = 0.022$).¹³ The larger magnitude of the effect of race among Black respondents on this outcome is particularly interesting, as it challenges existing theories that mainly concern the ingroup favoritism of *white* Americans — and their potential racial animus — when it comes to social policy opinions. Instead, these results support $H2a$, suggesting race-based ingroup favoritism for both white and Black respondents.

For our law enforcement spending policy outcome, 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 7 percentage points. We observed a small and statistically insignificant effect among

¹³This 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).

white respondents. The difference between these two subgroup effects of 6 percentage points is not statistically significant ($p = 0.091$). Thus, in contrast with our treatment spending outcome, respondent race did not appear to moderate the effect of racial identity on support for punitive spending policy.

While presenting mixed evidence for $H3a$, these results reflect those of Hurwitz and Peffley (2005a), who exposed respondents to descriptions of racial profiling and police brutality. The researchers observed that Black respondents who perceived the criminal justice system as chronically unfair exhibited ingroup favoritism in their judgements of the encounters, whereas white respondents were not sensitive to the race of the individual targeted. Hurwitz and Peffley (2005a) attributed this differential to the white respondents' perception of 'color-blind' fairness in the criminal justice system. In contrast to Black Americans, many white Americans have not experienced similarly high levels of incarceration and its community-wide consequences (Western, 2006). Given this lack of exposure to the criminal justice system and its racial biases, white Americans' current attitudes towards law enforcement in response to opioid use may not be as polarized by race, lead to the null effect among that subgroup.

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. Contrary to $H2b$, 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 1 percentage points was also not statistically significant.

A shared gender identity has a similar null effect on our enforcement spending outcome. Among male respondents, those who saw a story about a male substance user were 0 percentage points more likely to support increased punitive enforcement funding. Among female respondents, those who saw a story about a female substance user were 2 percentage points more likely to support increased law enforcement funding ($p = 0.114$). The interaction between respondent gender and the gender of the substance user portrayed in the article is not statistically significant, suggesting that gender does not moderate the effect of gender identity on support for punitive spending ($H3b$).

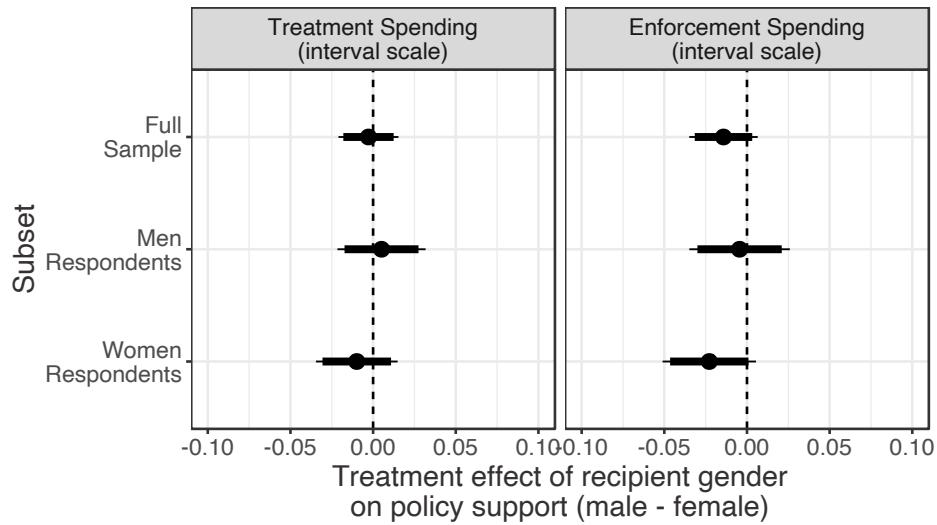


Figure 4: Treatment effects and confidence intervals by respondent gender on unit scale interval outcome. Points indicate the difference in levels of policy support between respondents who saw a male substance user profiled and those who saw a female substance user profiled, with 95%-confidence intervals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

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. Among urban respondents, those who saw a story about a rural substance user were 4 percentage points less likely to support treatment funding than those who saw a story about an urban substance user, but the effect is not statistically significant ($p = 0.108$). The same goes for urban respondents who saw a story about a suburban substance user compared to seeing a story about an urban substance user. In other words, respondents showed little ingroup favoritism for people from their own residential context ($H2c$). For our second outcome, support for law enforcement spending policy, we see a similar lack of subgroup effects ($H3c$). Together, these results show that shared residential identity on its own is unlikely to shape opinions on opioid-related policies.

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. While matching the identity of the substance user depicted in the news story appears to have a uniformly positive effect on support for treatment spending, this ingroup bias is only statistically distinguishable from zero for racial identity. We see more muted racial ingroup favoritism effects for respondents' support of the punitive law enforcement spending policy, which would be reflected by negative coefficients for the punitive outcome. In short, shared identity on attributes outside of race does not affect support for either opioid-related policy.

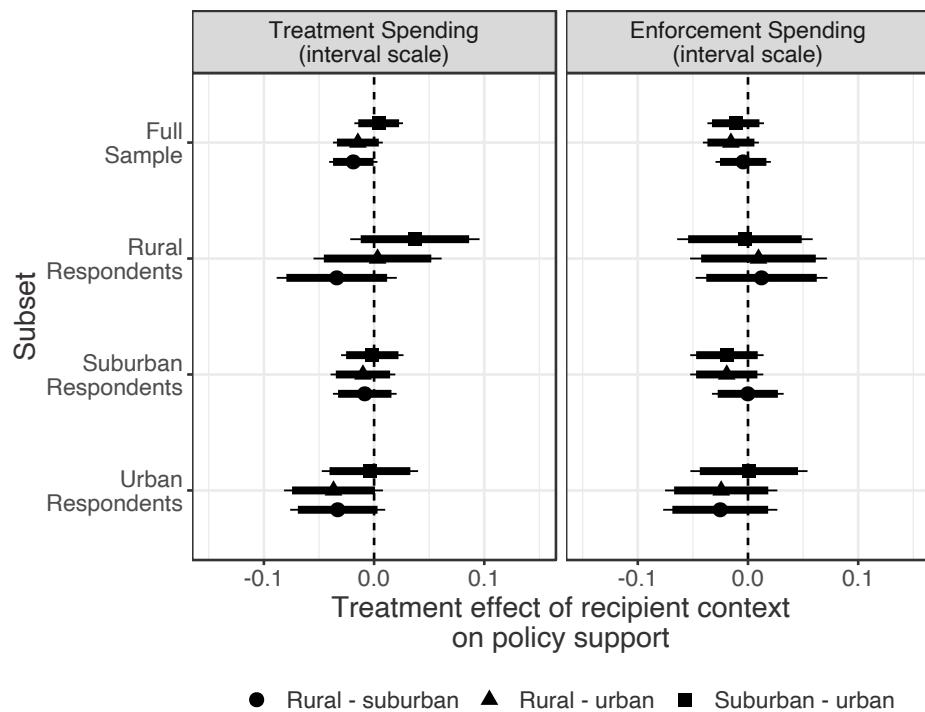


Figure 5: Treatment effects and confidence intervals by respondent geographic context on unit scale interval outcome. Points indicate the difference in policy support between respondents who saw a rural individual profiled vs. an urban individual profiled (triangles), rural vs. suburban individual (circles),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

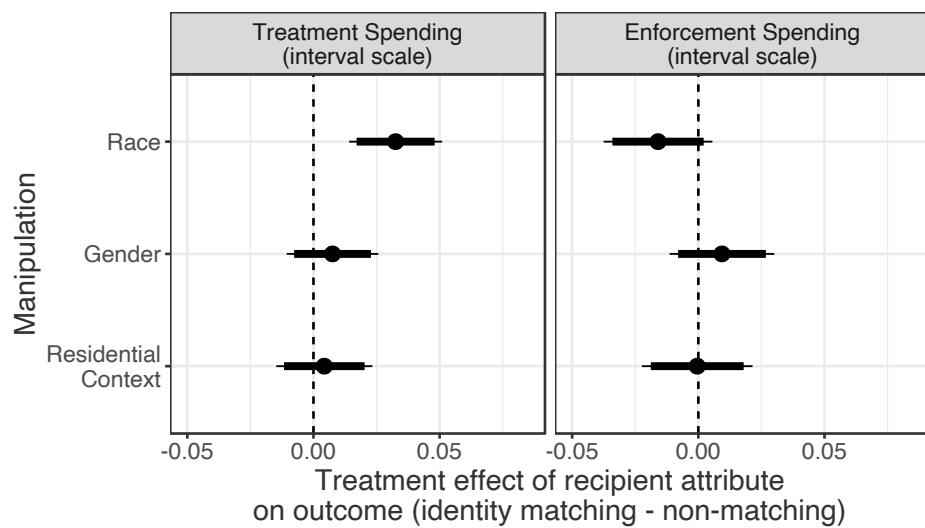


Figure 6: Treatment effects and confidence intervals for match between respondent characteristic and substance user attributes on unit scale interval outcome. Points indicate the difference in each policy outcome between respondents who matched the individual profiled and those who didn't match them 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: perceptions of 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 somewhat or strongly agreed with the statement that those addicted to opioids are to blame for their addiction. As hypothesized, agreement with this attribution of blame was highly predictive of policy opinions (*H4*). 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 using blame as a continuous variable (Imai, Keele, and Yamamoto, 2010; Imai et al., 2011).¹⁴ Contrary to *H5*, however, none of the treatment effects associated with group identity were mediated by blame. We present these mediation analyses in Supplementary Material 7, 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.¹⁵ 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 cause us to question previous observational evidence that argues this mechanism is a crucial

¹⁴Of course, conducting mediation analyses without randomizing the mediator in a parallel 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 in additional experimental designs.

¹⁵In Supplementary Material 8 and 9 we also use instrumental variables analyses to assess this potential mechanism. These analyses indicate that the experimental manipulations did not affect perceptions of blame to the extent necessary to meet the standards of a strong first stage instrument.

underpinning of social policy opinions. Our results instead suggest that other unmeasured 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, 2020). Regardless of measurement strategy, however, our experimental evidence suggests that blame may not be 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 (Brown and Zoorob, 2020), 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 crisis. The substance users depicted in the media coverage of the opioid epidemic 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 (Om, 2018; Shachar et al., 2020). 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, 2020).

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. 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. Even given the cross-cutting nature of the opioid epidemic, where theory would lead us to say other group identities should matter in the formation of public opinion, race matters most. While the effect of ingroup racial identity is uniform for treatment policy, effects on punitive policy are group-specific and likely driven by historic experiences with the criminal justice system — specifically, we see that Black Americans oppose punitive policy that would be directed towards Black substance users. Together, these empirical results provide depth 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 compare to 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 racial minorities are disproportionately affected in public health crises and these racially disparate patterns are accurately depicted in the media. This is likely to occur in policy debates about the opioid crisis as its effects become more severe for Black Americans (Caputi, 2021; Furr-Holden et al., 2021), but also for other public health crises with disproportionate impacts on communities of color, 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 (Testa, Moffitt, and Schenk, 2020). That said, the magnitude 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.¹⁶ 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 biases based on racial identity affirms 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

¹⁶Analyses 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 Supplementary Material 10.

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

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Supplementary Material

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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 3 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 also included 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 4-7 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.

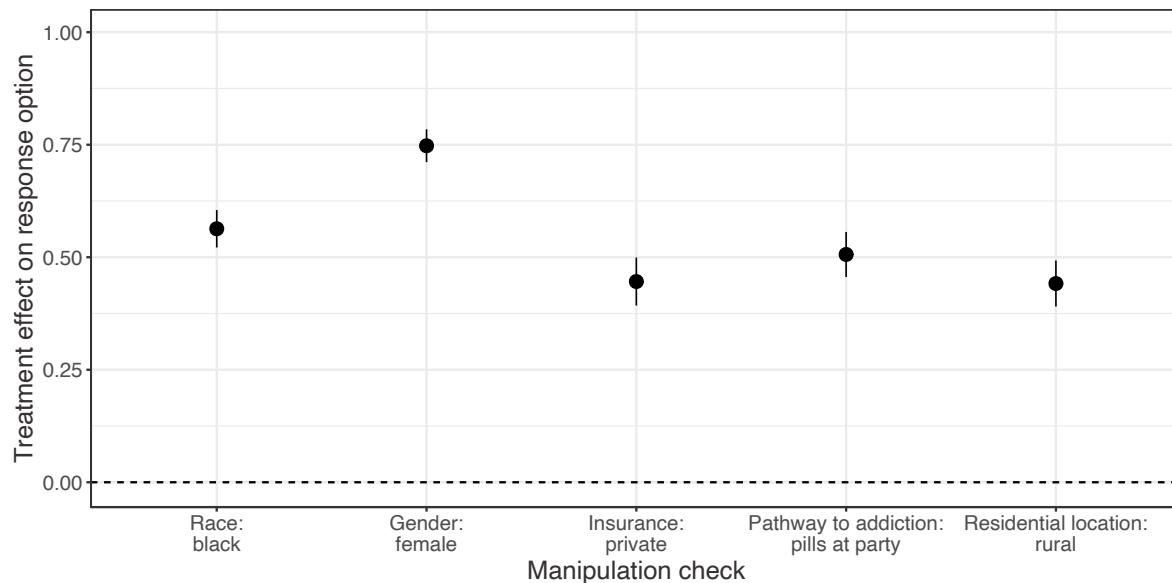


Figure D-7: Pilot study manipulation check by experimental attribute. Points indicate the percent of respondents correctly recalling the attributes of the individual profiled.

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 with an alternative coding of the dependent variables as 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. These alternative results, presented below in Figure 6-8, are largely similar to those presented in the text of the paper in Figure 2.

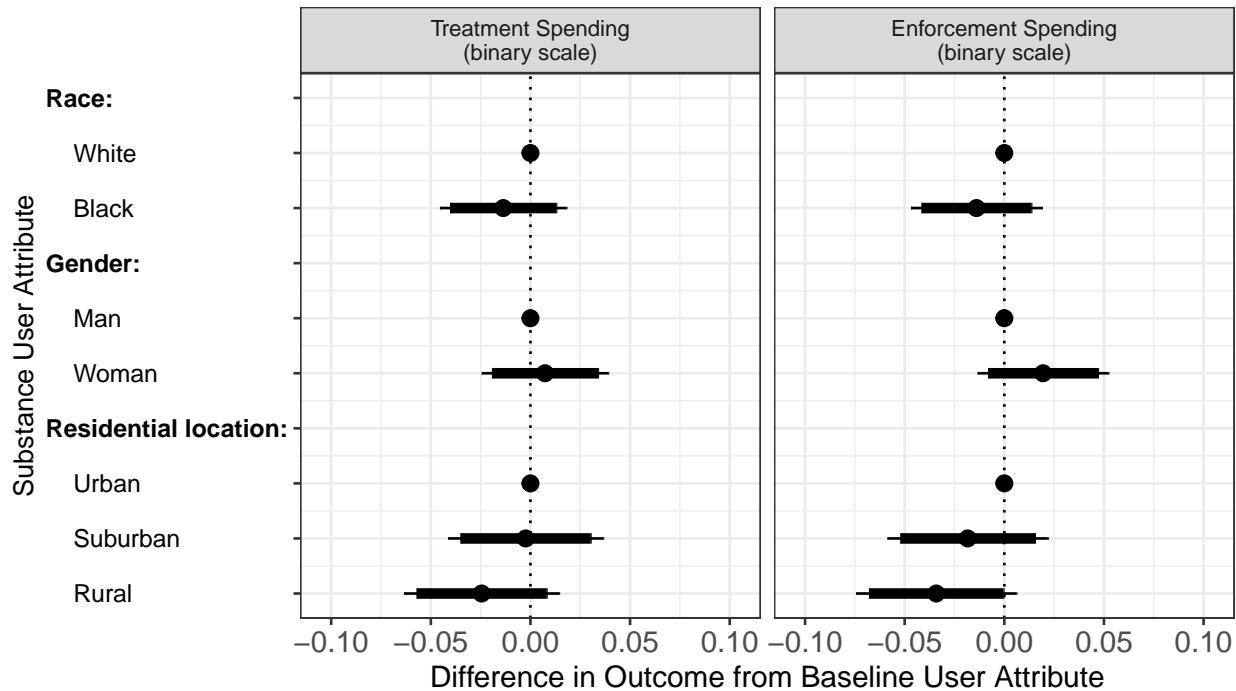


Figure F-8: Treatment effects and confidence intervals among all respondents. Points are regression coefficients and indicate the difference in levels of support for increasing policy funding between respondents in the baseline level condition (no confidence interval) compared to respondents in conditions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

In addition, we also present the results exploring heterogeneity in the treatment effects of various substance user attributes using a binary outcome. In Figure 6-9 we present the effect of the race treatment for both Black and white respondents.

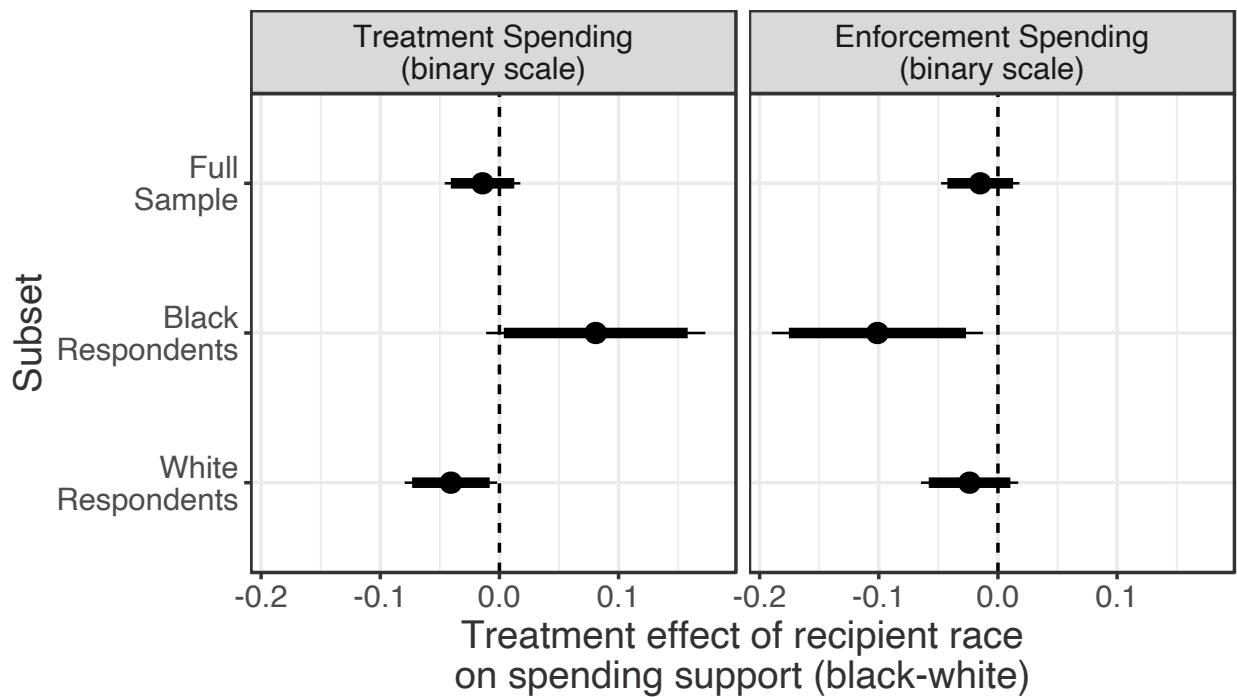


Figure F-9: Treatment effects and confidence intervals by respondent race. Points indicate the difference in levels of support for increasing policy funding between respondents who saw a Black individual profiled and a white individual profiled, with 95%-confidence intervals (thin lines) and 90%-confidence intervals (thick lines).

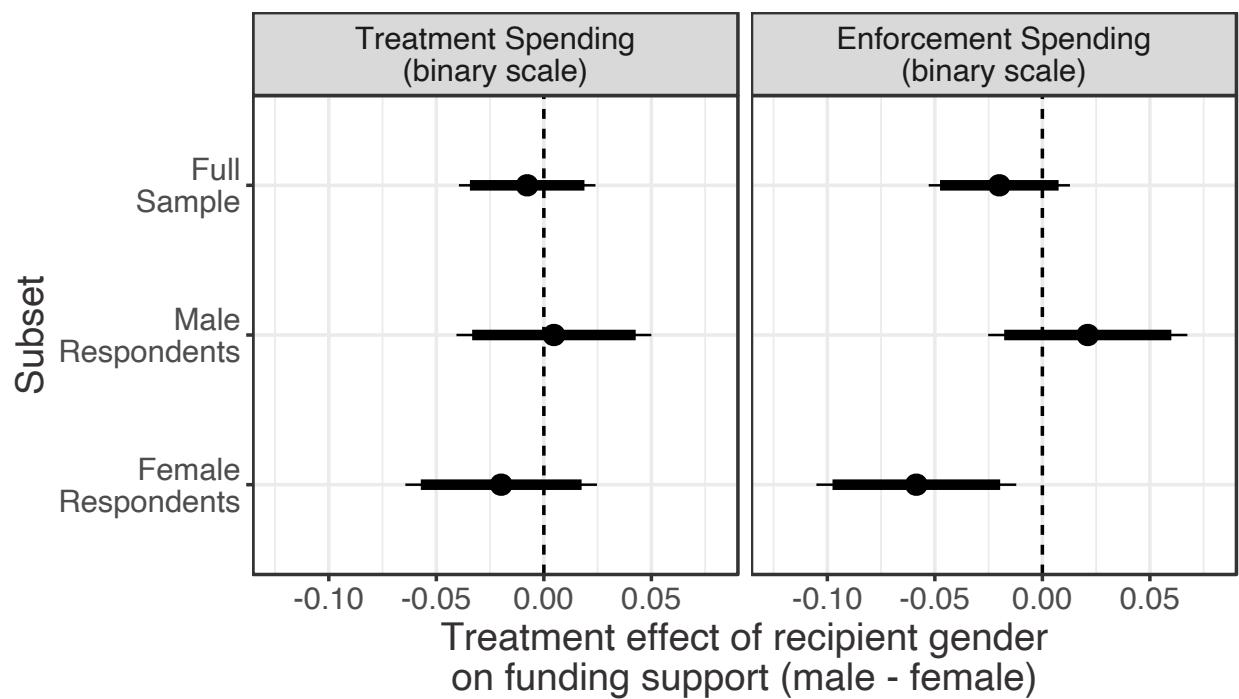


Figure F-10: Treatment effects and confidence intervals by respondent gender. Points indicate the difference in levels of support for increasing policy funding between respondents who saw a male substance user profiled and those who saw a female substance user profiled, with 95%-confidence intervals (thin lines) and 90%-confidence intervals (thick lines).

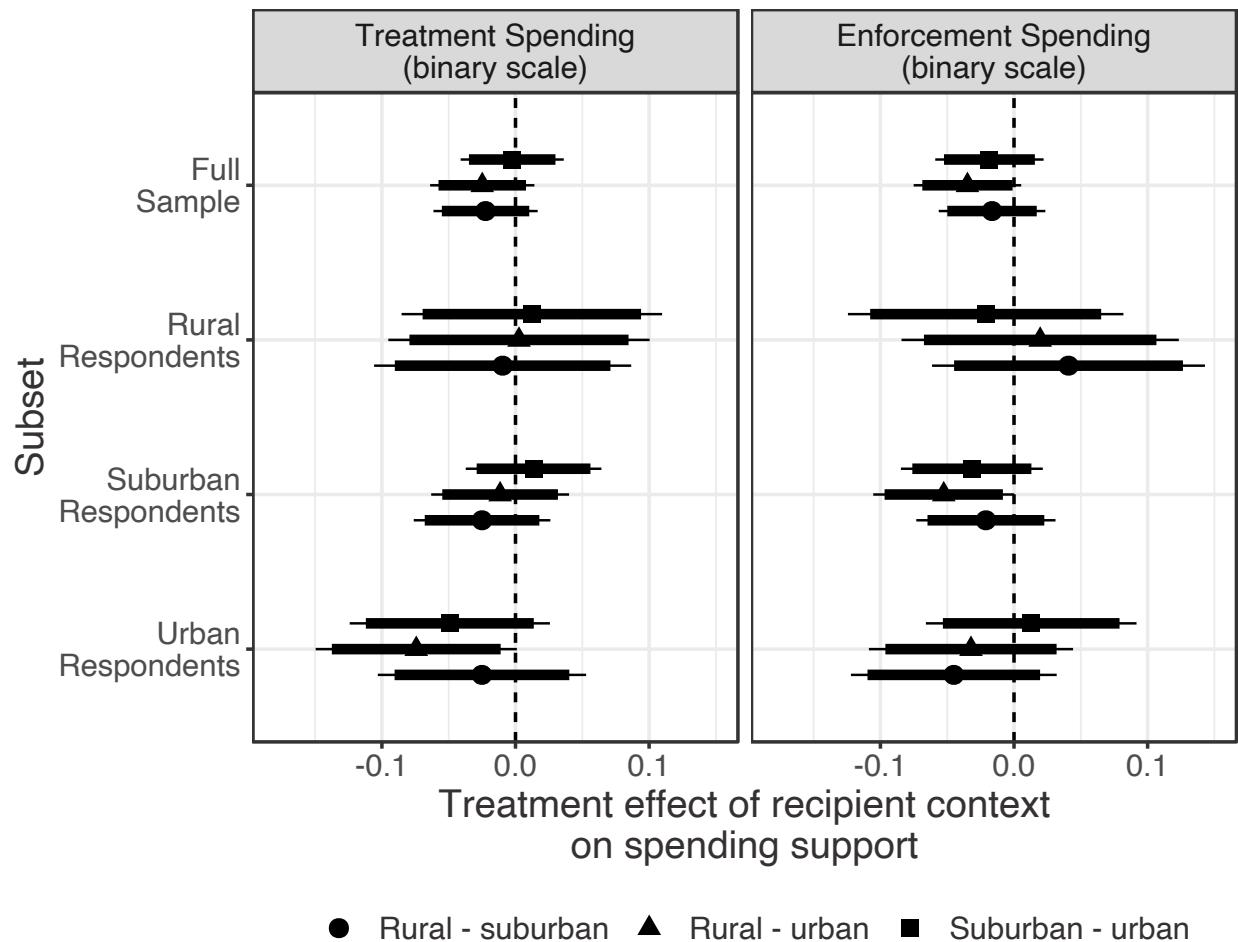


Figure F-11: Treatment effects and confidence intervals by respondent geographic context. Points indicate the difference in levels of support for increasing policy funding between respondents who saw a rural individual profiled vs. an urban individual profiled (triangles), rural vs. suburban individual (circles), or suburban vs. urban individual (squares), with 95%-confidence intervals (thin lines) and 90%-confidence intervals (thick lines).

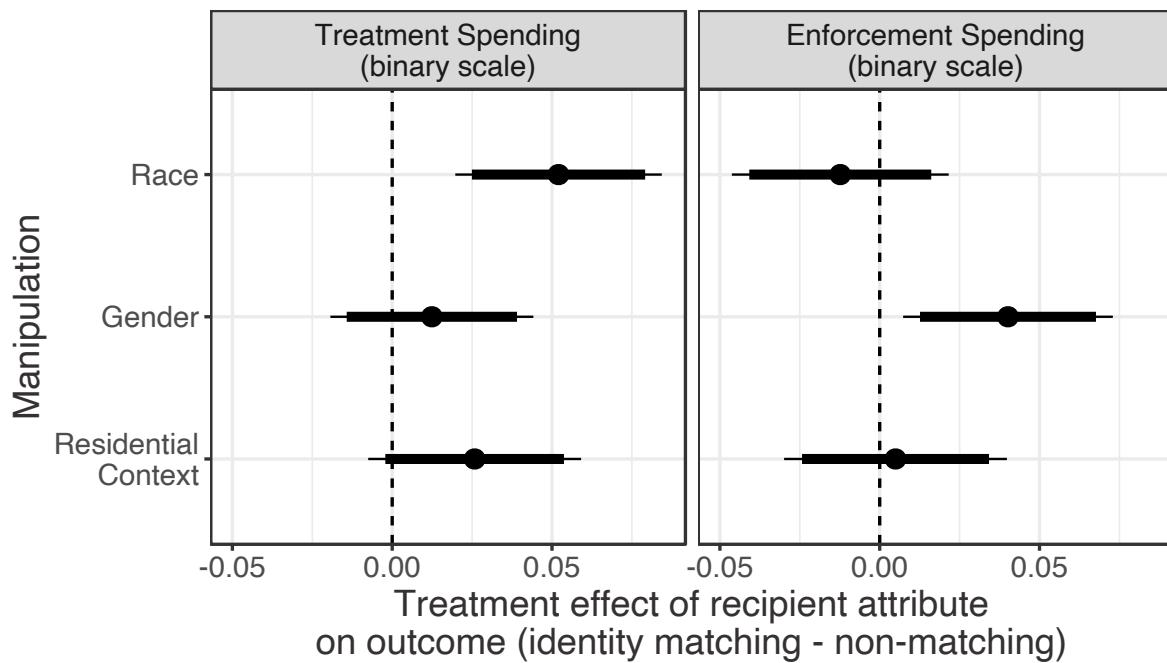


Figure F-12: Treatment effects and confidence intervals for match between respondent characteristic and substance user attributes. Points indicate the difference in each policy outcome between respondents who matched the individual profiled and those who didn't match them for each of the three identity attributes, with 95%-confidence intervals (thin lines) and 90%-confidence intervals (thick lines).

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.

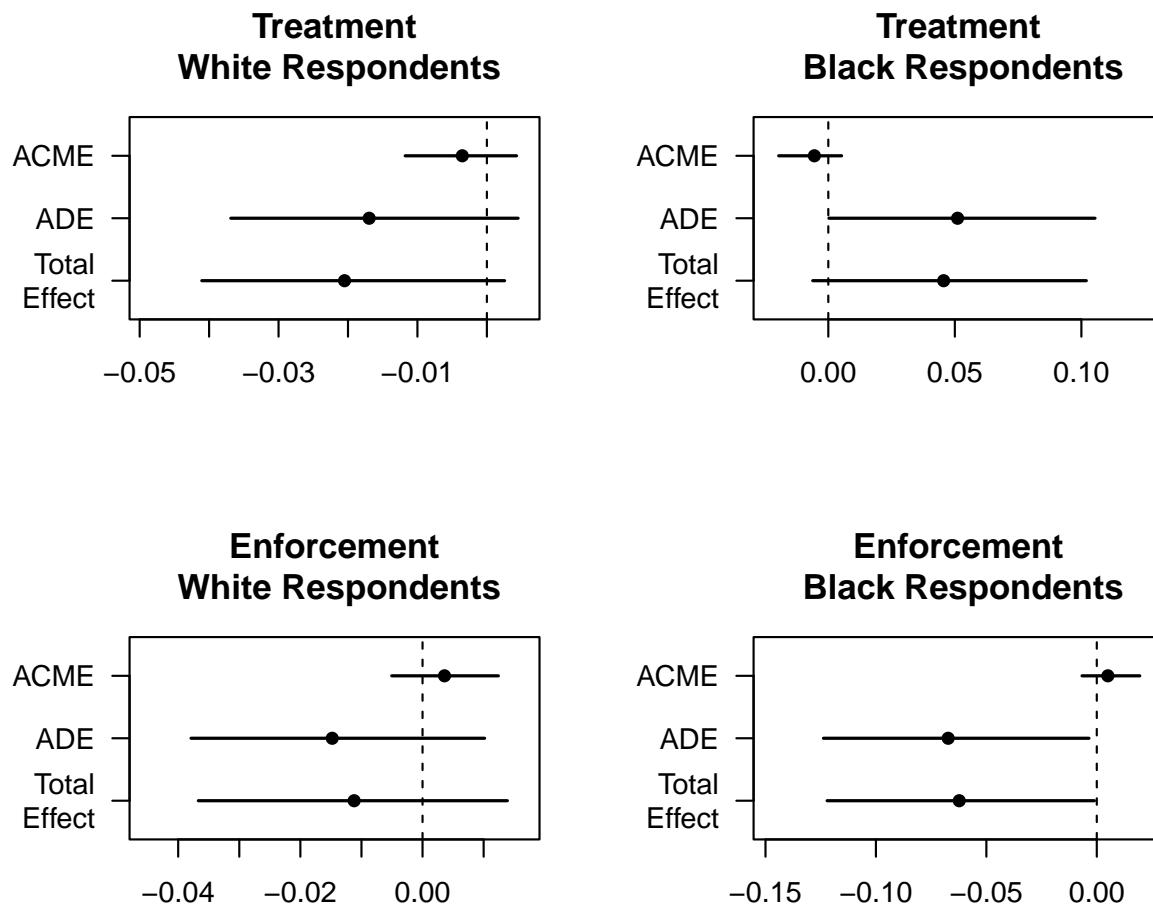


Figure G-13: Treatment effects and confidence intervals by respondent race. Points indicate the difference in levels of support for increasing policy funding between respondents who saw a black substance user profiled and those who saw a white substance user profiled, with 95%-confidence intervals. Total Effect represents a composition of the Average Direct Effect (ADE) and the Average Causal Mediation Effect (ACME).

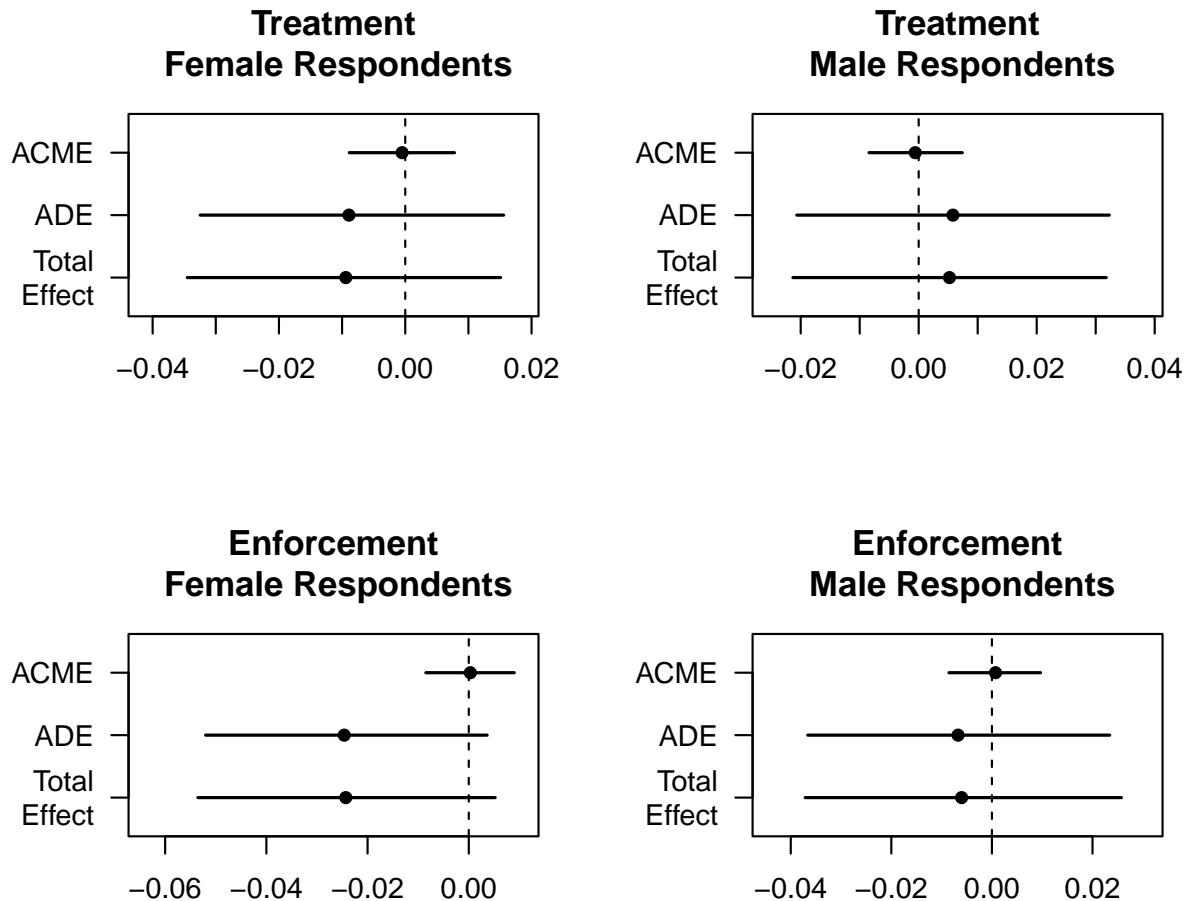


Figure G-14: Treatment effects and confidence intervals by respondent gender. Points indicate the difference in levels of support for increasing policy funding between respondents who saw a female substance user profiled and those who saw a male substance user profiled, with 95%-confidence intervals. 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 1.35 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 8-2 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	1.248*** (0.018)	0.820*** (0.011)
Observations	3,077	3,085
R ²	-2.880	-0.189

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 8-2, 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.¹⁷ 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.

¹⁷These 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 Supplementary Material 9.

I Additional Mechanism Tests: IV Analyses for Each Experimental Manipulation

In this section, we present the impact of individual blame on policy opinions using each individual experimental manipulation separately. In Table 9-3, 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 9-4 we show similar results for the gender identity manipulation and among respondent gender subgroups, and in Table 9-5 for the residential location manipulation and among respondent residential context subgroups.¹⁸

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	1.235*** (0.021)	1.268*** (0.060)	1.244*** (0.027)	0.815*** (0.013)	0.715*** (0.042)	0.809*** (0.016)
Observations	3,077	379	1,989	3,085	377	1,996
R ²	-2.832	-2.316	-3.123	-0.185	-0.246	-0.131

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	1.242*** (0.022)	1.198*** (0.029)	1.289*** (0.032)	0.813*** (0.014)	0.778*** (0.019)	0.852*** (0.020)
Observations	3,077	1,507	1,570	3,085	1,517	1,568
R ²	-2.859	-2.468	-3.282	-0.183	-0.119	-0.248

Note:

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

¹⁸We 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 1.04 for the full sample, 1.22 for the sample of black respondents, and 0.85 for the sample of white respondents. A regression of blame on the gender manipulation yields an *F*-statistic of 0.13 for the full sample, and a regression on the residential context manipulation yields an *F*-statistic of 2.92 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	1.289*** (0.028)	1.376*** (0.060)	1.272*** (0.035)	1.234*** (0.067)	0.845*** (0.017)	0.845*** (0.037)	0.835*** (0.022)	0.876*** (0.041)
Observations	3,077	767	1,789	521	3,085	769	1,793	523
R ²	-3.056	-3.429	-2.914	-2.979	-0.217	-0.183	-0.225	-0.290

Note:

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

J Heterogeneity in the Effects of Group Identity by Personal Exposure

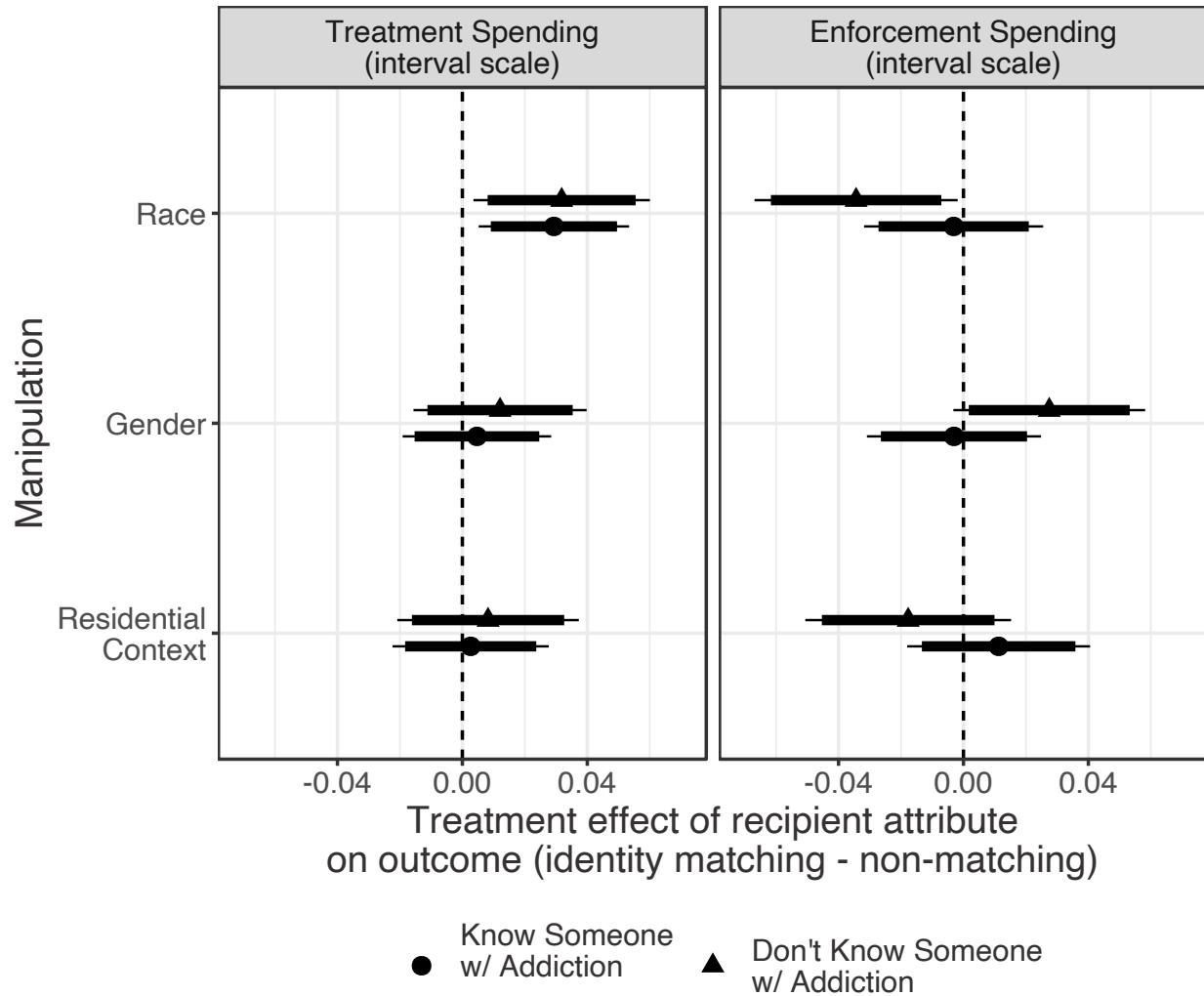


Figure J-15: Treatment effects and confidence intervals for match between respondent characteristic and substance user attributes on unit scale interval outcome. Points indicate the difference in each policy outcome between respondents who matched the individual profiled and those who didn't match them for each of the three identity attributes, with 95%-confidence intervals (thin lines) and 90%-confidence intervals (thick lines). 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.

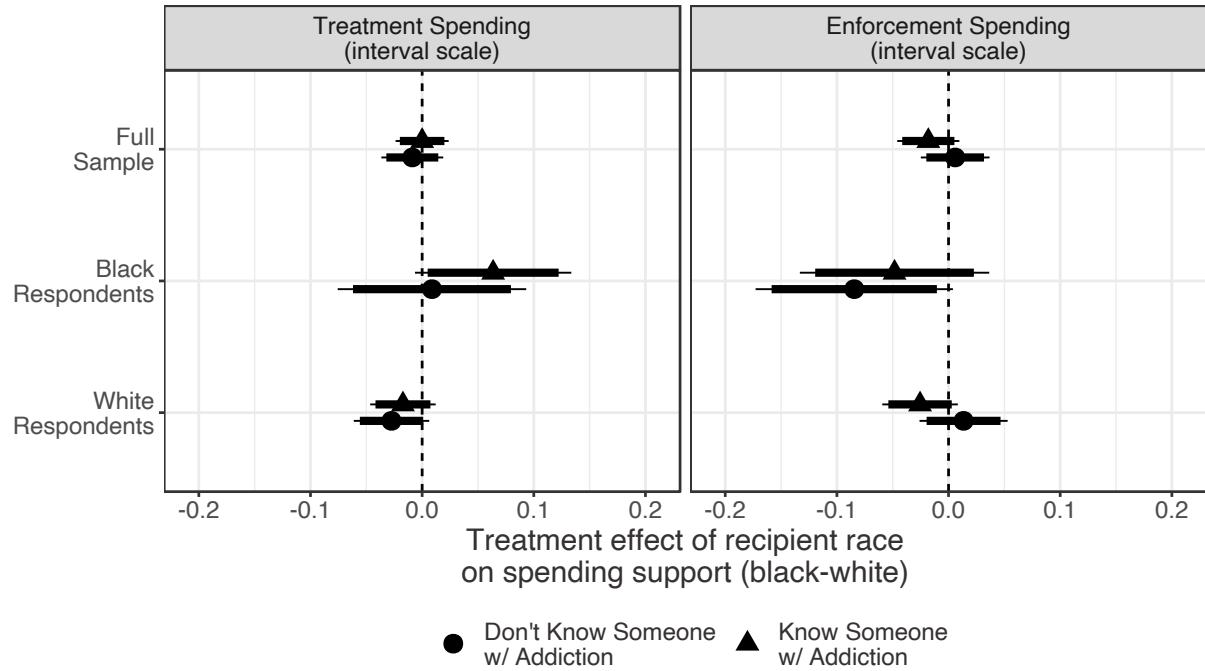


Figure J-16: Treatment effects and confidence intervals by respondent race and personal exposure to addiction. Points indicate the difference in levels of support for increasing policy funding between respondents who saw a black individual profiled and a white individual profiled, with 95%-confidence 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.

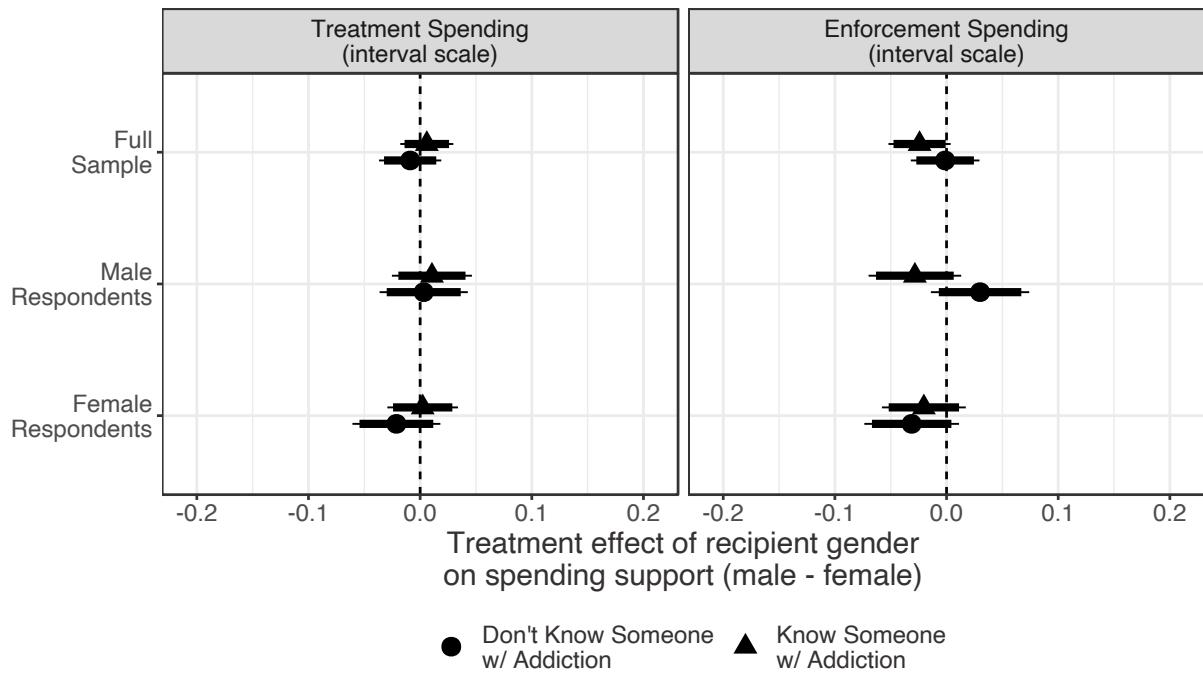


Figure J-17: Treatment effects and confidence intervals by respondent gender. Points indicate the difference in levels of support for increasing policy funding between respondents who saw a male substance user profiled and those who saw a female substance user profiled, with 95%-confidence intervals (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.

K Pre-Analysis Plan

Included below are the hypotheses we test as well as our analytical strategy for testing each hypothesis as pre-registered with EGAP. We note that the hypothesis numbers as noted in the manuscript do not necessarily correspond with the ordering of those hypotheses that we report in this manuscript, which we have adjusted for conceptual clarity. Elements of the pre-analysis plan (the study's theory, experimental design, and survey instrument) that are discussed or included elsewhere in the manuscript are not reproduced below but are included in the PAP filed with EGAP. As noted in the manuscript, our experimental design also included two manipulations unrelated to group identity: how the substance user received treatment for their addiction and how the substance user began using opioids. Results from these manipulations are discussed in other work outside of this paper, and as such we do not display these hypotheses or analytic strategies below.

Hypotheses

Shared Identity

We expect that group identity may sway perceptions of deservingness and subsequent policy support. This leads to:

Hypothesis 1 (H1): *We expect that the race, gender, and location in a rural or non-rural location of policy beneficiaries depicted in a media story will affect support for treatment and punitive policies, operationalized as support for increasing funding for opioid treatment policy and punitive policy. Specifically, for the full sample, we expect a decrease in support for funding after reading about a black policy beneficiary compared to a white policy beneficiary.*

Hypothesis 2 (H2): *We expect that respondents will be more sympathetic to policy beneficiaries who share identities with the respondent – e.g., black respondents will be more sympathetic to black policy beneficiaries depicted in the media, while white respondents will be more sympathetic to white policy beneficiaries. Viewing a profile with a shared identity will increase respondent support for funding treatment policy.*

Policy responses to drug use have traditionally been characterized as emphasizing addiction treatment or punishment (Meier, 1994). To capture both dimensions, we also ask whether respondents support funding for law enforcement to arrest and prosecute drug users. Yet, while drug policy is multi-dimensional, the longitudinal shift away from punishing drug use towards connecting users with treatment suggests these policy attitudes are inversely correlated. This leads to:

Hypothesis 3 (H3): *We expect that any experimental treatment which increases respondent support for funding treatment policy will also decrease respondent support for funding law enforcement to arrest and prosecute drug users.*

The mechanism behind support for both treatment and punishment is the perceived ‘deservingness’ of the substance users. Capturing the change in sympathy is our outcome

variable of blame. A shared identity will decrease agreement with the belief that individuals are to blame for their own addiction. This leads to:

Hypothesis 4 (H4): *We expect the ‘blame’ outcome variable to negatively correlate with support for funding treatment policy and positively correlate with support for funding punitive policy.*

Personal Exposure

Hypothesis 5 (H5): *We expect that respondents who have personally known someone who has struggled with addiction will express greater support for addiction treatment funding.*

Analytical Strategy

Shared Identity

The following approaches will be used to test each hypothesis:

H1: Two-tailed t-tests of difference in means of treatment funding support between each vignette treatment group (e.g., ‘rural’) vs. all the others in that category (e.g., ‘suburban’ and ‘urban’), using one treatment group in each category as the baseline category.

H2: Two-tailed t-tests of support for treatment funding on each identity treatment within respondent subgroups detailed below. Second, interact identity treatment effect with an indicator for the respondent’s identity subgroup. Third, measure effect of shared identity via omnibus model using new indicator for a shared identity between each respondent to the identity treatment they received.

- For the effect of the race experimental manipulation, subgroups by survey respondent race/ethnicity (black vs. non-Hispanic white).
- For the effect of the gender experimental manipulation, subgroups by respondent gender (male vs. female).
- For the effect of the location experimental manipulation, subgroups by respondent location (rural vs. non-rural, as well as three subgroups matching the manipulated levels of rural, urban, and suburban).

H3: Conduct tests for H1 and H2 using punitive outcome. Repeat additional tests below using punitive outcome.

H4: Conduct tests for H1 and H2 using blame outcome. Repeat additional tests below using blame outcome.

Personal Exposure

H5: Two-tailed t-tests for the difference in means of treatment funding support between respondents based on personal exposure to those with opioid addiction.