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Evidence for the efficacy of humanizing narratives to promote support for harm-reduction policies in the United States

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Abstract

Background Prior work has suggested that harm-reduction policies (HRPs) are influenced by beliefs that the public hold about drug use. The current studies sought to explore if controllability beliefs about addiction are linked with such support for heroin-oriented HRPs and whether aspects of humanizing narratives may be effective in heightening support for HRPs.

Methods Two studies administered in the United States (total $N = 536$) used survey designs to assess the causal effects of humanizing narratives on HRP support and controllability beliefs (Study 1) and the specific effect of mortality outcomes on HRP support (Study 2).

Results Results showed that while humanizing narratives did appear to elicit changes in controllability beliefs, this did not translate to changes in HRP support. Study 2 found that changes in HRP support were elicited by emphasizing the potential mortality affiliated with long-term heroin use.

Conclusions The current research suggests that, although controllability beliefs do explain HRP support, targeting controllability may not be an effective approach for messaging campaigns. Instead, the more severe mortality outcomes of long-term heroin use may be the more effective strategy to employ in public health messaging campaigns seeking to elicit HRP support.

Introduction

Harm reduction

In 2017, the U.S. Department of Health and Human Services declared what is coined the opioid crisis [77] as a public health emergency due to the rapid rise in opioid overdose deaths the United States experienced over the past decade [51]: [75]. Opioid Use Disorder (OUD), in addition to posing risk for a fatal overdose, is associated with a wide array of other negative health effects [6, 10]. Although life-threating, only a limited number of individuals receive medical treatment for their addiction [20]. Harm reduction services are a proffered public health solution for counteracting opioid-related mortalities and other related harms that may transpire from treatment disengagement [70]. Throughout this article, we refer to harm reduction policies (HRPs) as services directed towards reducing the negative outcomes associated with opioid use, including overdose mortality, illness, and criminal setbacks—during the pre, post, or active phases of substance consumption. Therefore, not only did we include traditionally defined services in our examination, but we also extended it to other services that play a role in the harm reduction continuum. Based on this definition, we explored the following services: overdose education and naloxone distribution programs (the training and distribution of naloxone to

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laypersons);overdose prevention centers—also referred to as supervised consumption sites, supervised injection facilities, and drug consumption rooms (locations individuals can consume their substance under medical supervision); syringe service programs (programs distributing sterilized injecting equipment); drug checking equipment (the distribution of equipment that tests substances for adulterants); heroin decriminalization (the elimination/mitigation of legal consequences for substance possession); heroin and methadone maintenance (the provision of a prescribed injectable opioid to an individual who is unresponsive to other forms of medical treatment, or prescription methadone for those dealing with heroin withdrawal symptoms); and Good Samaritan Laws (laws providing immunity in court to bystanders who seek medical help for a drug overdose; [21, 71]).

Within the United States, harm reduction programs are primarily regulated through government funding and policy. Here, the federal government typically outlines principles and funding for harm reduction services while the state and local government are responsible for enacting policies for these services [39]. Despite evidence supporting their efficacy[3, 7, 27, 28, 32, 38, 55, 57, 59, 68, 80], support for such policies varies considerably [1]. Some of the opposition may be due to political and moral objections [69], however, an upstream contributor to these objections may be the underlying belief that individuals should be able to prevent their addiction in the first place or that one can simply overcome an addiction [22, 66]. Since public opinion can impact voting outcomes and policy enactment [13], it is important to identify the specific factors that predict decreased support for these potentially life-saving policies and to further investigate methods efficacious at promoting support.

Public stigma, controllability beliefs, & policy support

Variability in harm reduction support may be understood through the lens of stigma and its theoretical frameworks regarding helping behavior. Studies have demonstrated that stigmatizing attitudes applied towards those with a mental illness—such as beliefs about dangerousness and the responsibility for condition onset—can result in a variety of discriminatory behaviors including withholding help [2, 18, 40]. Important to the current study, this stigmatization process seems to be even more pronounced for substance use disorders [4, 16, 18, 19, 60] perhaps due, in part, to such conditions being labeled as resulting from a moral failing or a lack of willpower [61, 62]. There have been theoretical frameworks that have provided insight into the relationship between stigma and helping behavior. For example, Weiner's Attribution Theory of Stigma [79] postulates helping behavior to be heavily influenced by a person's assumptions about the cause and controllability of a condition (e.g., controllability beliefs). Similar models, such as the moral model of helping, also tap into this concept (see [12]). While withholding help can manifest through the denial of direct resources—like housing, work, and adequate healthcare—aimed at benefiting an individual's welfare [17, 54, 74], evidence also indicates this type of behavior may manifest through more indirect avenues such as support for policy and the funding of treatment programs [8, 9, 50]. These relationships have shown to be similar for HRP support as well, with various studies showing that stigma acts as a psychological barrier for support [29, 34, 43]. More specifically, the belief that an individual deserves to be punished—versus helped—for their addiction is shown to predict lower support for HRPs [37] which further underscores the role of controllability beliefs at play.

Despite evidence suggesting controllability beliefs potentially contributing to the relationship between stigma and HRP support, to our knowledge, no study has examined this directly; although, there are a few studies, both qualitative and quantitative, that insinuate this concept. For example, a qualitative study by Ezell et al. [22] focusing on perceptions of nonmedical drug use and harm reduction among stakeholders found the normative value of "picking yourself up by the bootstraps" underlying some participant's responses in reference to overcoming drug use. One respondent noted, "I just don't see how life would ever be that bad. To me, it's just simple; quit doing drugs, clean up your act, get a job" [22]. Moreover, a quantitative study found higher controllability beliefs about prescription opioid and heroin use were associated with higher levels of negative affect, higher levels of perceived dangerousness, higher levels of perceived responsibility, and lower support for redistributing income to fund drug treatment [25]. A different study that included a few HRPs in their outcome measures found personal blame predicted lower support for policies assisting individuals with OUD—including support for Good Samaritan Laws [73]. Taken together, such studies imply that controllability beliefs may be a target for interventions vis-à-vis HRP support.

The effects of messaging on controllability beliefs and policy support

Message framing has gained traction for its ability to shift attitudes, attributions, and responses to a wide array of issues [11, 52, 64]. In terms of stigma reduction, researchers have turned to messaging interventions that integrate humanizing narratives into their content [26, 33, 42, 47] perhaps due to their ability to introduce environmental causes to a condition, elicit emotional responses, and induce message receptivity (see [46]).

Based on the theoretical frameworks of stigma and helping behavior, countering controllability beliefs may seem like an intuitive solution for diminishing stigma and influencing policy support, however, some evidence suggests this method as ineffective [45, 56]. These types of messages may prompt the public to perceive a condition as completely out of an individual's control, and consequently, sustain perceived unpredictability, perceived dangerousness, and pessimism about treatment effectiveness [30, 65]. The following process, however, seems to be circumvented if narratives follow certain frameworks. For example, a study found that having participants read a statement mentioning the magnitude of the issue followed by a narrative accentuating the interaction of personal and environmental factors contributing to a prescription opioid addiction was most effective at reducing stigma and swaying attribution beliefs [31]. This framework also proves to be beneficial for garnering drug policy support [5, 53, 72], although it should be noted that it does not preclude other details within the narratives from influencing outcomes [44].

Considering the indicated relationship between stigma, controllability beliefs, and HRP support [22, 25, 73] in tandem with the power narratives have for diminishing stigma, shifting attributional beliefs, and garnering policy support [5, 31, 53, 72], we proposed that assigning our participants to conditions in which they read narratives competing in addiction controllability events (e.g., intervention conditions) would be an effective route for shifting addiction controllability beliefs, and therefore, eliciting heightened support for HRPs when such conditions follow the previously outlined framework (e.g., narrative integration with an informative statement, highlighting internal and external causes). To our knowledge, no study has thoroughly examined such a relationship; although, one study briefly tapped into this concept in relation to general policy support. In their study, Goodyear and Chavanne [25] included an addiction controllability measure in one of their studies that employed competing narratives. Although results may suggest that altering perceptions of the controllability of an opioid addiction could be insufficient for directly influencing policy support, the study faces a few limitations (e.g., including using a single item scale to measure controllability beliefs as well as only manipulating condition precipitance) that may be influencing outcomes. Therefore, prior to designing interventions which target controllability beliefs, we sought to confirm links between stigma and support for HRPs via controllability beliefs individuals may hold about addiction in a brief pilot study.

Pilot study

As previously noted, there is a lack of clarity in existing literature concerning the role of controllability beliefs on the relationship between OUD stigma and HRP support. Although past research indirectly examined this relationship, a direct examination is necessary to justify our rationale for subsequent intervention design. Therefore, prior to our primary investigation, we conducted a pilot study assessing if dehumanization stigma is related to HRP support and if the link between dehumanizing stigma and HRP support is explained by controllability beliefs.

We used the online sampling service Prolific to obtain a sample of 374 U.S. adults (M_{age} = 38.47, SD = 13.03, range = 18–76; 181 females). Participants responded to three items addressing their dehumanizing beliefs towards people who use heroin, four items assessing their beliefs about the controllability of heroin addiction, seven items assessing their willingness to support various harm reduction services, and we also collected a few covariates. Results revealed significant direct effects from controllability beliefs to HRPs and from dehumanizing stigma to controllability beliefs. Importantly, there was a significant indirect effect from dehumanization stigma to HRP support through controllability beliefs [Mediated Effect—ME = − 0.08, SE = 0.04, 95% CI [− 0.155, − 0.003], p = 0.040] after controlling for a set of covariates. Such results provided us with further evidence that controllability beliefs may be an effective avenue for intervention to heighten support for HRP; therefore, we continue our investigation into Study 1 (See supplemental file for full pilot study information regarding measures, procedures, and statistical analyses).

Overview of the intervention studies

Given that the pilot verified indirect effects from stigma to HRP support through controllability beliefs, the aim of Study 1 was to explore the contribution narratives depicting different levels of addiction controllability for individuals using heroin have on public support for HRPs. While harm reduction strategies are not necessarily limited to individuals in this specific heroin addiction context, the transition to heroin is a common outcome tied to initial opioid use (see [14]) and the public may hold greater stigmatizing attitudes towards injection drug use compared to other forms of drug consumption [41]. Therefore, we focused on this type of drug use for our investigations. Bearing in mind that narratives show to be particularly effective at shifting attribution attitudes and garnering policy support when applied to an informative statement highlighting the broad societal issue [5, 31, 53, 72], we hypothesized controllability beliefs about heroin use

will be lower in participant conditions where a narrative is present compared with controls (Hypothesis 1A), and that controllability beliefs will be lower in the low-controllability condition compared with the high controllability condition (Hypothesis 1B). Moreover, building off our pilot study, we hypothesized the link between intervention conditions and HRP support would be explained by heroin addiction controllability beliefs (Hypothesis 1C). Although some evidence may suggest this approach to be ineffective [25], we attempt to address shortcomings in the previous work by including multiple descriptors of controllability in our narratives, using multiple items to measure controllability beliefs, and including a statistical provision which outlines the extent of heroin overdose mortality when employing our narratives.

Study 1

Our pilot study supports the general hypothesis that dehumanizing stigma about opioid use is linked with lower support for HRPs via controllability beliefs. This provides supporting context for the use of controllability as a potential intervention tactic in messaging campaigns, although this has yet to be directly tested. Using a narrative approach, Study 1 sought to assess if humanizing narratives may be an effective tool for increasing support for HRPs using a randomized experimental design.

Method

Participants. We used Prolific, an online sampling service, to obtain a sample of 320 U.S. adults (M_{age} = 38.70, *SD* = 13.32, range = 19–75, 164 females). The participants primarily self-identified as White, non-Hispanic (76.9%), with the remainder identifying as African American (7.8%), Asian (6.6%), Latinx/Hispanic (6.9%), Native American/Indigenous (0.3%), or "Other" (1.6%). All participants completed an online consent document, and the study was conducted in adherence with APA ethical principles.

Procedure. After completing the consent document, participants were randomly assigned to one of three conditions—a true control condition (*n* = 103), a low controllability narrative (*n* = 109), and a high controllability narrative (*n* = 108). In the control condition, participants simply read a statistical writeup about the dangers of heroin addiction which read as follows:

> *"From 1999 to 2020, approximately 143,000 people in the United States died from heroin-involved overdoses. In 2020, about 13,000 people died from heroin-involved overdoses and about 20% of all opioid deaths involved heroin. Harm reduction interventions are evidence-based strategies aimed at minimizing the negative health and social issues associated with drug use."*

Subsequentially, participants read about the efficacy of HRPs:

> *"These services have been proven to prevent death, injury, disease, overdose, and substance misuse while simultaneously offering access to healthcare, social services, and treatment. Such services can include needle and syringe distribution to drug users (to avoid needle-sharing), sites where opioid users can safely inject under medical supervision, and legal drug content testing (e.g., sites where drug users can check drug content for dangerous mix-ins before using), to name a few."*

This is consistent with control conditions found in previous work on opioid addiction narratives (e.g., the "Magnitude of the Problem" message in Heley et al., [31], the "Base Message" in [44]). In the low controllability narrative, participants read identical statistical information, followed by a narrative about a "real person" affected by heroin addiction—we explained that the name had been removed for anonymity but, in fact, the story was fabricated. The story detailed an individual who got into a car accident, was prescribed medication for back pain, but slowly became addicted to the opioids over time as a direct result of trying to seek out medication for the back pain through different avenues. Eventually, this person becomes addicted to heroin as a cheaper alternative to prescription medication. The pathway from a car accident to addiction was used based on prior work in this area which used a similar approach to craft narratives about opioid addiction (see [78]).

The primary difference between the low controllability condition and the high controllability condition is that, in the former, the pursuit of medication is exclusively described as related to persistent back pain. In the high controllability condition, the character is described as developing a bout of depression, which then leads to "experiment[ing] with drugs and alcohol in order to cope with the unfortunate circumstances in their current life". This narrative's portrayal of a depressive episode was used due to prior research showing that depression carries a stigma of controllability and often elicits blame from others [15, 48]. In other words, although this person was struggling with addiction, the depressive episode may have made their scenario appear more controllable. Conditions were coded as 0 = control, 1 = Narrative—High Controllability, 2 = Narrative—Low Controllability.

Measures

Pre-Manipulation. In order to control for pre-manipulation controllability beliefs, we asked a single item

phrased, "Heroin addiction is completely controllable", with respondents able to rate the extent to which they agree on a scale from 1 (strongly disagree) to 7 (strongly agree). We also assessed a few important covariates. First, considering the known impact of support for small government has on restorative (as opposed to punitive) drug policy attitudes (e.g., [23, 67]), we administered a 5-item scale assessing support for a small government ("I believe in 'small government'", "We should not have to pay taxes for funding of substance abuse programs", =0.85). We also collected participant sex (0 =female, 1= male), and asked participants if they knew someone who had experience with an opioid addiction or if they, themselves, had experience with an opioid addiction (0 =No, 1= Yes) due to experience with opioid addiction being related to opioid stigma [63].

Post-Manipulation. To measure HRP support after the manipulation, participants received a prompt about how *"many people have different ideas about how we should deal with opioid/heroin addiction issues in this country. One set of ideas come from harm-reduction techniques, intended to play a role in preventing drug-related deaths by offering access to healthcare, social services, and treatment."* Participants were then asked to report the extent to which they would support various harm-reduction and prevention policies on a scale ranging from 1 (little to no support) to 7 (strong support). Support for the following HRPs were assessed: needle and syringe distribution to drug users (to avoid needle-sharing), sites where opioid users can safely inject under medical supervision, heroin maintenance programs (prescription of heroin to users who do not do well with other treatments), decriminalization of heroin (e.g., possessing small amounts does not cause jail/prison time), legal drug content testing (e.g. sites where drug users can check drug content for dangerous mix-ins before using), Good Samaritan laws (e.g., no criminal prosecution for assisting someone who needs emergency medical help during an opioid overdose), and programs which support the administering of NARCAN/naloxone to individuals who have overdosed. These 7 items together displayed adequate reliability (α =0.89). Participants also responded on a scale to four items about their beliefs regarding the controllability of heroin addiction (α =0.86). Some research in the past has limited this measure to a single item (e.g., [25]),however, as the authors have recommended, we incorporated additional prompts ("People who use heroin made a decision to become addicted to heroin" and "People have complete control over whether they become addicted to heroin") to increase reliability. Responses were collected on a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

Results

Descriptive statistics and bivariate correlations for the variables of interest can be found in Table 1. As in Study 1, controllability scores (both pre- and post-manipulation) were related to lower HRP support (| r |s >0.32, ps <0.001). Males and those with greater belief in small government had higher controllability beliefs (rs >0.21, ps <0.001), while those with greater belief in a small government and those who did not know anyone who has experience with opioid addiction reported lower support for HRPs (| r |s >0.16, ps <0.005). Condition was not significantly related to controllability beliefs (r= −0.09, p= 0.119).

In order to test if condition was indirectly related to HRP support through changes in controllability beliefs, we ran indirect effects testing in MPlus to examine the pathway from condition to latent HRP support (indicated by the 7 manifest HRP items) through latent post-manipulation controllability (indicated by the four controllability items) while controlling for pre-manipulation controllability beliefs and a set of covariates

Table 1 Bivariate correlations and descriptive statistics for Study 2 variables of interest

	1	2	3	4	5	6	7	8
1. HRP support	–	−.49**	−.001	−.32**	−.47**	.16**	−.01	.15**
2. Post-control		–	−.09	.67**	.54**	−.09	.21**	−.05
3. Condition			–	−.07	.05	−.04	.07	−.01
4. Pre-control				–	.40**	−.10	.16**	−.05
5. Small Gov					–	−.04	.07	−.002
6. Know Opi						–	−.08	.25**
7. Sex							–	.01
8. Self-Opi								–
M	4.64	3.00	1.02	2.56	3.34	0.41	0.48	0.06
SD	1.58	1.37	0.82	1.62	1.40	0.49	0.50	0.24

N, 320. **p <.01; *p <.05. Know Opi, Know Someone with Opioid Addiction Problem; Gov., Government; Post-Control, Post-Manipulation Controllability Beliefs.

(small government beliefs, knowing someone with an opioid addiction problem, personal experience with opioid addiction, and participant sex). The measurement model displayed adequate fit statistics [χ^2 (97) = 214.55, $p < 0.001$; CFI = 0.942, TLI = 0.928; RMSEA = 0.062, 90% CI [0.051, 0.073], SRMR = 0.054]. After controlling for our set of covariates, the effect of condition on post-manipulation controllability was significant (β = − 0.09, $p = 0.022$), and the link between post-manipulation controllability and HRP support was significant as well (β = − 0.47, $p < 0.001$). Indirect effects testing demonstrated a significant indirect effect of condition on HRP support through controllability (ME = 0.04, SE = 0.02, 95% CI [0.004, 0.083], $p = 0.030$).

We next compared latent means using the MODEL TEST function, constraining means to be equal to one another across conditions. Although the indirect effect of condition on HRP support through controllability was significant, no significant differences emerged when comparing the latent HRP support scores between conditions (all Wald values < 0.52 all *p*s > 0.471). In terms of controllability, significant differences did emerge between the control condition and the high controllability vignette (Wald = 4.68, $p = 0.034$), although the control vs. low controllability vignette and high vs. low controllability vignette comparisons were not statistically significant control (Wald = 1.25 and 1.43, respectively, *p*s > 0.265; see Fig. 1). When collapsing the narrative conditions into one group, HRP support scores still did not significantly differ between conditions (Wald = 0.54, $p = 0.478$), although controllability differences were significant between the conditions (Wald = 4.26, $p = 0.039$).

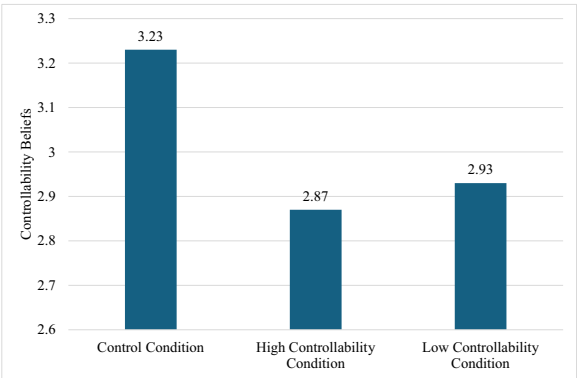

Fig. 1 Controllability beliefs by condition in Study 1. $N = 320$. Difference between control and high controllability conditions significant at $p < .05$—no significant differences found for the control-low controllability comparison or the high controllability-low controllability comparison

Study 1 discussion

Study 1 provided intriguing results while also raising a few additional questions. First, the evidence from the intervention study suggests that controllability beliefs do help to explain heightened support for HRPs. However, in regard to our intervention, pairwise comparison of effects suggested that while the presented narratives were effective at diminishing controllability beliefs about addiction, they did not elicit differences in the HRP outcome. Furthermore, the intended effect of portraying variation in controllability between our two narratives did not appear to elicit differences in the controllability measure. In sum, the evidence seems to support that narrative approaches, in general, may be effective at targeting controllability beliefs, but that this may not translate into greater support for HRPs. The efficacy of narratives in this study are consistent with previous work showcasing how humanizing narratives can dimmish the perceived personal responsibility of addiction and induce more positive attitudes about those with OUD [31].

One explanation for why HRP support effects did not emerge is that the narratives did not highlight the more extreme outcomes of addiction. Prior research has suggested that highlighting mortality could be effective in reducing stigma in some cases—Sumnall et al. [72] used narratives which portrayed the protagonist dying of an overdose, finding that these narratives were effective at reducing stigma when some conditions were met (e.g., gender/age of the protagonist). Therefore, in Study 2, we sought to investigate if emphasizing mortality as a potential outcome of addiction (as opposed to addiction alone) might elicit changes in HRP support (Hypothesis 2). Considering the evidence that narratives do appear to diminish controllability beliefs, our study will compare two narratives which emphasis addiction as the outcome of opioid use vs. mortality as the outcome of opioid use.

Study 2

Participants. We once again used Prolific to obtain a sample of 216 U.S. adults ($M_{age} = 39.06$, $SD = 12.60$, range = 20–94, 100 females). The participants primarily self-identified as White, non-Hispanic (71.2%), with the remainder identifying as African American (15.8%), Asian (7.0%), Latinx/Hispanic (4.2%), Native American/Indigenous (0.5%), or "Other" (1.4%). One participant was removed for failing a mid-study attention check, leaving a final sample size of $N = 215$. All participants completed an online consent document, and the study was conducted in adherence with APA ethical principles.

Procedure. After completing the consent document, participants were randomly assigned to one of two conditions—an addiction outcome narrative ($n = 108$) or

a mortality outcome narrative ($n = 107$). In both conditions, participants read the same statistical information from Study 1, followed by a narrative about a "real person" affected by heroin addiction—for the addiction outcome condition, the participants read the low controllability narrative condition from Study 1. In the mortality narrative condition, the narrative was identical except that it ended in the following phrasing: "*When they tried to quit heroin, they were hit with many withdrawal symptoms (e.g., nausea, anxiety, insomnia, heart palpitations), which led to their continued use. This cycle of attempting to quit and relapsing occurred for several months, until their family received an unexpected phone call one morning informing them that the individual had passed away from a heroin overdose.*" Conditions were coded as 0 = addiction narrative, 1 = mortality narrative.

Measures

Pre-Manipulation. We controlled for a handful of baseline variables. Considering the evidence from Study 1, we controlled for pre-manipulation controllability beliefs. This was accomplished by asking a single item phrased "Heroin addiction is completely controllable", with respondents able to rate the extent to which they agree on a scale from 1 (strongly disagree) to 7 (strongly agree) as was done in Study 1. We asked a similar item to control for baseline HRP support, asking participants "I would support most policies which could help to reduce the number of people who die from heroin overdoses" with respondents able to rate the extent to which they agree on a scale from 1 (strongly disagree) to 7 (strongly agree). We also assessed small government beliefs using the same five items from Study 1 ($\alpha = 0.84$) alongside the same political affiliation item. We also asked participants if they knew someone who had experience with opioid addiction or if they, themselves, had experience with opioid addiction (0 = No, 1 = Yes). Participant sex (0 = female, 1 = male) was also collected as a covariate.

Post-Manipulation. After the manipulation, participants received the same HRP support prompt ("many people have different ideas about how we should deal with opioid/heroin addiction in this country…") and were asked to report the extent to which they would support same 7 HRP items (needle and syringe distribution, sites where opioid users can safely inject under medical supervision, heroin maintenance programs, heroin decriminalization, legal drug content testing, Good Samaritan laws, and programs which support the administering of NARCAN/naloxone; $\alpha = 0.87$). Responses were collected on a scale ranging from 1 (little to no support) to 7 (strong support).

Results

Bivariate statistics and descriptive statistics for the variables of interest can be found in Table 2. Of note, HRP support was related to being in the mortality narrative condition ($r = 0.14$, $p = 0.038$), being more liberal ($r = -0.40$, $p < 0.001$), and having lower small government beliefs ($r = -0.51$, $p < 0.001$).

Next, in order to test for differences between conditions, we first ran a model with HRP support regressed on the condition variable (0 = addiction, 1 = death), while controlling for the set of covariates (baseline controllability beliefs and baseline HRP support, small government beliefs, political affiliation item, participant sex, if participants knew someone who had experience with opioid addiction or if they themselves had experience with opioid addiction). The measurement model displayed adequate fit statistics [χ^2 (55) = 118.77, $p < 0.001$; CFI = 0.926, TLI = 0.907; RMSEA = 0.068, 90%

Table 2 Bivariate statistics and descriptives for Study 3 variables of interest

	1	2	3	4	5	6	7	8	9
1. HRP support	–	.14*	−.46**	.49**	−.51**	.04	.05	−.40**	.02
2. Condition		–	−.01	−.06	−.01	−.19**	−.02	−.02	−.04
3. Pre-control			–	−.40**	.40**	−.14*	−.002	.29**	−.01
4. Pre-support				–	−.51**	.11	−.06	−.37**	.07
5. Small Gov. beliefs					–	.08	.03	.56**	−.01
6. Know Opi						–	.23**	.11	−.03
7. Self Opi							–	−.004	−.03
8. Political affiliation								–	.08
9. Sex									–
M	4.74	0.50	2.80	5.69	3.35	0.45	0.07	3.23	0.52
SD	1.35	0.50	1.74	1.42	1.28	0.50	0.26	1.72	0.50

$N = 207$. **$p < .01$; *$p < .05$. Know Opi., Know Someone with Opioid Addiction Problem. Self Opi., Personally Dealt with Opioid Addiction Problem Gov., Government. Pre-Control, Pre-Manipulation Controllability Beliefs.

CI [0.049, 0.086], SRMR = 0.065]. Many of the covariates were statistically significant: of those linked with greater HRP support were higher baseline HRP support scores (β = 0.20, p = 0.006), lower baseline controllability beliefs (β = − 0.25, p < 0.001), lesser belief in small government (β = − 0.23, p = 0.012), having personally experienced an opioid addiction issue (β = 0.11, p = 0.038), and being female (β = 0.11, p = 0.002). Importantly, the link between condition and HRP support was statistically significant (β = 0.12, p = 0.039) after controlling for our set of covariates. Estimated mean HRP scores were significantly higher in the death condition (M = 4.87, SE = 0.10) compared to the addiction condition (M = 4.51, SE = 0.10; p = 0.010; see Fig. 2).

Discussion

Our present studies expand upon an underexamined topic within the drug policy literature: the impact humanizing narratives have on public support for HRPs. Building from our pilot study, Study 1 explored whether the manipulation of addiction controllability beliefs through humanizing narratives could influence HRP support while Study 2 explored if addiction outcomes presented in narratives could influence support. In Study 1, we found that, overall, the employment of narratives was effective at diminishing addiction controllability beliefs (although this did not translate into changes in HRP support), whereas findings from Study 2 indicated that emphasizing the mortality potential of heroin addiction can heighten public support for HRPs.

Given the impact message framing has on public attitudes and responses towards a wide array of social issues [11, 52, 64], including opioid use [26, 33, 47], in Study 1 we tested whether manipulating addiction controllability beliefs through humanizing narratives could influence HRP support. Supporting Hypothesis 1A, we found that controllability beliefs were lower in participant conditions where a narrative was present. These findings parallel that of Heley and Colleagues [31] who showcased the efficacy narratives have for expanding opioid-related attributional beliefs. We build off this work by extending the investigation into heroin use. Contrary to our expectations, we found no significant differences in controllability beliefs when comparing our two narrative conditions. Moreover, we did not find significant differences in HRP support between our control arm or narrative conditions. Although puzzling, prior work has also suggested that targeting causal attributions may be insufficient for eliciting policy support [25, 35]. Nevertheless, our research still holds important implications for the communication of opioid use. Considering its contribution to the stigmatization process [58], the media could play a role in curbing negative attitudes about opioid use by, when possible, explicitly outlining the multi-causal factors to addiction. Additionally, educational campaigns aimed at decreasing the stigma surrounding drug use should consider integrating stories highlighting both the personal and environmental factors contributing to drug addiction. If attempting to garner support for drug-related policies, however, communication campaigns should turn to efforts other than shifting public perceptions of addiction controllability. We expand upon this implication in our discussion of Study 2.

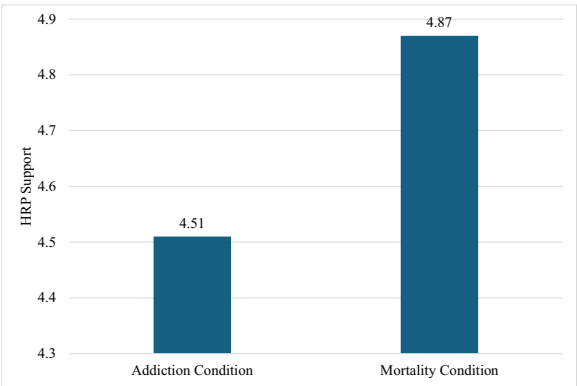

Fig. 2 Estimated marginal means for Study 2 conditions. N = 207. Difference statistically significant (p = .010) after controlling for baseline HRP support and covariates (gender, political affiliation, small government support, and pre-manipulation controllability beliefs)

Based on our inconsistent findings in Study 1, Study 2 tested whether emphasizing the potential outcomes—rather than the controllability—of a heroin addiction could influence HRP support. We found that our overdose mortality outcome elicited stronger support than its non-overdose counterpart. Considering the importance that emotional engagement has on message persuasion [24], perhaps discussing the severe outcomes of a drug addiction elicits an emotional response necessary to promote support that is unable to be reached when shifting causal attributions. Such a proposition is plausible considering Kennedy-Hendricks and colleagues (2016) found sympathy and pity could partially explain the relationship between narrative interventions and support for policy when employing competing narratives of an OUD during pregnancy. Future research should investigate the specific emotional responses contributing to the relationship between OUD outcomes and HRP support. Taken together, results from Study 1 and Study 2 may be of particular importance to harm-reduction advocacy groups. Our findings imply the importance of focusing on the lethality of an OUD, rather than the controllability, when prompting public support for HRPs. Worth noting, however, our research only addresses overdose mortality.

Future studies should investigate how illustrating other opioid-related circumstances which could lead to death, such as mortality from drug-related violence [49] or suicidality [36], could impact HRP support.

Limitations

The current studies are not without limitations. First, our samples were comprised of individuals residing within the United States, and therefore, results should only be generalized to the U.S. public. Differences existing in other nations with respect to the prevalence of opioid use, the public's familiarity with harm reduction strategies, and cultural values may impact the outcomes of our previous studies. Second, we primarily measured attitudes and behavioral responses towards heroin use. While other studies indicate similar outcomes for prescription opioids [5, 25, 31], such findings may not transfer to other forms of drugs such as synthetic opioids. Given synthetic opioids are a leading contributor to drug overdoses within the United States [76], perceived issue saliency among the public may influence attitudes and responses differently. Future research should examine the relationships presented in this article in relation to other drug types. Third, we only tested attitudes and behaviors directly after participants were presented with the intervention. Therefore, the impact our interventions have on long-term attitude or behavior change is uncertain—although studies such as ours are critical for understanding causal effects, long-term sustainment of policy support is essential for interventions to merit substantial funding investment. Fourth, the measures we employed may face a few shortcomings regarding reliability. This may be especially true for our baseline measures of addiction controllability beliefs and HRP support, which only use a single item to capture the construct. We recommend researchers incorporating additional items into these scales during future iterations of the study. Finally, we did not statistically control for participant familiarity with harm reduction strategies. Instead, we provided all participants with a brief message defining harm reduction along with a message regarding their stated efficacy. It is possible some participants were more knowledgeable of harm reduction strategies which could have influenced our results. Additionally, our informative statements on harm reduction could have prompted participants' attitudes regarding controllability beliefs and HRP support. Further research is needed to address these gaps.

Conclusion

In summary, the current research examined public support for harm reduction policies (HRPs) across two studies. We based our investigation off previous research suggesting that addiction controllability beliefs can explain opioid use stigma and HRP support as well as evidence suggesting that humanizing narratives can serve as an effective method for garnering policy support. Overall, we found that narrative-based interventions targeting controllability beliefs appear to be insufficient for influencing HRP support. Rather, we found emphasizing overdose mortality to be a favorable method for eliciting support. Despite a few limitations, our studies add to both the harm reduction literature and the public messaging literature. It is recommended that future research investigates what specific emotional reactions contribute to HRP support, so that continued efforts for mitigating harm affiliated with opioid use can be designed in a manner consistent with empirical research.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12954-025-01206-y.

Supplementary file 1.

Author contributions

KJ inspired the development of the research topic, coordinated the research design, and developed the intervention strategies. KJ and SF both collaborated to formally build and run all three studies, analyze the datasets, write the manuscript, and provide edits/revisions.

Data availability

Data from the studies can be found at the following OSF link: https://osf.io/qegcj/?view_only=65af05d142f7444b812bc746051851b0.

Declarations

Competing interests

The authors declare no competing interests.

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