

The Impact of Recovery Narratives on Stigmatizing Attitudes

Toward Medication-Assisted Treatment

Honors in Psychology Project

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Abstract

This research explored the idea of stigma regarding heroin use disorder and how giving people detailed recovery scenarios or factual information impacts their stigmatizing attitudes toward medication-assisted treatment (MAT) versus drug-free rehabilitation. In Study 1, we tested the hypothesis that people receiving methadone treatment would get less credit and be seen as less responsible for their recovery than those in drug-free rehabilitation. We also examined whether reading a recovery narrative featuring methadone would yield less stigmatizing attitudes and more support for methadone policies. In Study 2, we replicated and extended these results by adding recovery narratives featuring buprenorphine (Suboxone®) and naltrexone (Vivitrol®), as well as a non-narrative control condition describing multiple recovery methods. In both studies, we found little support for the hypothesis that MAT recovery is less laudable than drug-free recovery. However, both studies showed significantly higher levels of support for MAT than drug-free treatment following exposure to MAT recovery narratives or factual information about the superiority of MAT.

The Impact of Recovery Narratives on Stigmatizing Attitudes Toward Medication-Assisted Treatment

In recent decades, the increasing ease of access to opioids and overreliance on prescription painkillers have resulted in an opioid epidemic, with 26.4 to 36 million people suffering from opioid use disorder (OUD) worldwide (Woo et al., 2017). In the United States, there were over 42,000 opioid-related deaths in 2016, a more than 500% increase since 1999 (Centers for Disease Control and Prevention, 2017); at least \$55.7 billion in workplace, health care, and criminal justice costs accrue every year (Woo et al., 2017).

Opioid use disorder statistics are so grim that in March 2016, President Barack Obama personally called for action to “escalate the fight against the prescription opioid abuse and heroin epidemic” (The White House, Office of the Press Secretary, 2016). On October 26, 2017, President Trump declared the opioid crisis a public health emergency (Woo et al., 2017). There are two main approaches to treating OUD: drug-free rehabilitation and medication-assisted treatment (MAT). In the U.S., MAT involves treatment with either opioid agonists (methadone, buprenorphine) or the opioid antagonist naltrexone.

Medication-Assisted Treatment for OUD

Methadone maintenance therapy (MMT). Methadone is a synthetic mu opioid receptor agonist originally synthesized in the late 1930s (Bart, 2012). The typical method of delivery of methadone is a liquid taken orally. Following oral administration, peak plasma levels are reached within 2 to 4 hours, and the half-life is approximately 28 hours, allowing for once-daily dosing. Methadone’s ability to relieve the opiate withdrawal syndrome was noted as early as 1947. However, it was not until 1964 that scientists at the Rockefeller Medical Research Institute began to evaluate methadone as a means of long-term medication-assisted treatment for OUD.

These researchers helped show that methadone relieved opioid withdrawal, blocked the euphoric and sedating effects of opioids, and markedly reduced cravings, thus greatly reducing the chances of both relapse and overdose. In addition, Bart (2012) asserted that many of the addiction-related abnormal stress responses to stressors involving adrenocorticotrophic hormone and cortisol are corrected once patients are stabilized on methadone. For some, the correction of these disturbed stress hormones can reduce the chance of both relapse and overdose and help patients adhere to MMT more easily than drug-free rehabilitation. In fact, the effect of methadone on stress hormone functioning may be the most important factor when comparing MMT to other forms of treatment for OUD.

In the U.S., MMT is confined to federally licensed opioid treatment programs (i.e., methadone clinics), and patients are required to have daily observed consumption of their methadone for months before any take-home doses can be considered (McCarty, Priest, & Korthuis, 2018). Opioid treatment programs also provide intensive counseling, which may improve treatment outcomes, especially during the initial 6 months of methadone maintenance (Bart, 2012). People with OUD are typically vulnerable in the beginning stages of their recovery, and counseling can be crucial during this stage to keep them on track and give them the skills to complete treatment.

Treatment with buprenorphine. Buprenorphine is a partial opioid agonist that was approved for the treatment of OUD in 2002 in the U.S. (Bart, 2012). The typical method of delivery of buprenorphine is sublingually with either a tablet or a film. Following sublingual administration, peak plasma levels are reached within 1 to 3 hours and the half-life is approximately 37 hours, allowing for once daily dosing (Bart, 2012). Buprenorphine is most often prescribed in a compounded abuse-deterrent formulation of the partial opioid agonist and

the opioid antagonist naloxone in a 4:1 ratio known as Suboxone® (Dolan & Mehrjerdi, 2015).

The naloxone has no effect when the medication is taken as directed (dissolved under the tongue); however, if the buprenorphine is extracted from the compound and injected, the naloxone becomes bioavailable and induces rapid withdrawal symptoms.

Buprenorphine maintenance is safe, with equivalent adverse events to methadone and placebo (Bart, 2012). Unlike methadone, buprenorphine may be prescribed by physicians who have completed 8 hours of online training and have obtained a waiver from the DEA allowing them to prescribe it in an office setting (McCarty et al., 2018), although they are required to refer patients for counseling in addition to the medication. Because it is less stringently regulated, buprenorphine may be more widely available than methadone in many communities.

Treatment with naltrexone. The most recently approved form of medication-assisted treatment for OUD is the opioid antagonist naltrexone, most often administered via intramuscular injection in an extended-release formulation called Vivitrol® (Bart, 2012). Extended-release naltrexone can block the effect of opioids for approximately 21 to 28 days after intramuscular dosing. Vivitrol® reduces cravings for opioids in some individuals, prevents opioid overdose, and carries no risk for diversion. The medication may be especially useful for people with OUD who have had a prolonged period of abstinence from opioids but who are still at risk for relapse, such as those leaving jail or inpatient drug-free treatment.

Comparative effectiveness of methadone, buprenorphine, naltrexone, and drug-free rehabilitation. There is a clear consensus among experts in OUD treatment that drug-free rehabilitation alone, without MAT, is ineffective (Volkow, Frieden, Hyde, & Cha, 2014). The risk of fatal opioid overdose is doubled for those receiving only drug-free treatment compared to those receiving treatment with methadone or buprenorphine (Pierce et al., 2016). Adherence to

MAT regimens among people with OUD are comparable to adherence to recommended treatments among people with other chronic diseases such as diabetes, hypertension, and asthma (McLellan, Lewis, O'Brien, & Kleber, 2000).

To date, no studies have directly compared the impact of all three medications and drug-free rehabilitation; instead, several reviews have compared pairs of these treatments. Mattick, Breen, Kimber, and Davoli (2009) reviewed 11 randomized controlled trials comparing MMT to drug-free rehabilitation or placebo; they found that MMT was significantly better than either alternative at retaining people in treatment and reducing the use of heroin. In a more recent review, the same authors (Mattick, Breen, Kimber, & Davoli, 2014) reviewed 31 randomized controlled trials comparing buprenorphine maintenance to placebo or MMT. They found that buprenorphine was better than placebo at retaining people in treatment, but only high-dose buprenorphine (at least 16 mg per day) was superior to placebo at suppressing illicit opioid use. They also found that MMT was better than buprenorphine at keeping people in treatment, but among those retained, MMT and buprenorphine were equivalently effective in reducing illicit opioid use. There were no differences in adverse effects for MMT and buprenorphine.

The determination of the effectiveness of extended-release naltrexone has been controversial. The medication was approved by the FDA after only one large randomized controlled trial (Krupitsky et al., 2011) conducted in Russia, where oversight of clinical trials is reportedly less rigorous than in the U.S. (Goodnough & Zernike, 2017). One major drawback to Vivitrol® is that patients must first withdraw completely from all opioids before they can receive the first injection. This is too high a barrier for many people with OUD in the community, but it is less of a problem for people who have already withdrawn during a period of prolonged abstinence, such as a jail term or a stint in inpatient treatment. Another drawback, however,

applies to all Vivitrol® patients: They lose their tolerance for opioids while they are on the antagonist medication and are very vulnerable to overdose if they do not get their Vivitrol® injection every month. To date, no studies have compared Vivitrol® to MMT. Two randomized controlled trials comparing Vivitrol® to buprenorphine (Suboxone®) have been published. A trial conducted in Norway (Tanum et al., 2017) found no significant differences between the two treatments across a 24-week trial. In another 24-week trial conducted in the U.S. (Lee et al., 2017), patients who were successfully inducted into treatment (72% of the Vivitrol® group and 94% of the buprenorphine group) had comparable outcomes, but the fact that 28% of those randomized to Vivitrol® were unable to tolerate withdrawal long enough to get any injections was a major drawback.

Despite the debate about the relative effectiveness of different forms of MAT, researchers and public health authorities are unified in their assertion that MAT is the most effective approach for OUD and that it is underutilized (Bart, 2012; McCarty et al., 2018; Volkow et al., 2014). McCarty et al. (2018) reported that only about 2 in 5 people with OUD received any treatment in 2015 (the most recent year for which data were available), and most of those received only drug-free treatment. According to Vestal (2016), only 4% of physicians have sought the certification necessary to prescribe buprenorphine, and the vast majority of the doctors with the authority to prescribe it rarely, if ever, do so.

Effects of Stigma on MAT

Stigma, or social devaluation and discrediting associated with a mark or attribute, represents a significant barrier to mental health (Earnshaw, Smith, & Copenhaver, 2012). Stigma can act as a barrier between patients and the treatment that is appropriate for them, and that stigma may be especially acute for methadone treatment and the people who receive it.

In two in-depth qualitative studies (Earnshaw et al., 2012; Woo et al., 2017), researchers have uncovered the devastating impact of stigma toward people receiving MMT. In Earnshaw et al. (2012), a representative sample of 12 participants receiving MMT at an inner-city clinic in the northeastern United States participated in in-depth qualitative interviews designed to elicit their experiences of perceived stigma. A common stereotype held by family and friends was that participants were “untrustworthy” or that they were likely to steal things. Participants also felt that employers believed they were untrustworthy, and they reported being treated coldly by healthcare workers due to their involvement with MMT. Some of the other people in the participants’ lives, such as dating partners, fiancés, and government employees, thought participants could not change, while others did not understand the function or purpose of MMT. Participants described their use of methadone as treatment for an illness, whereas they perceived that others often viewed their use of methadone as continued drug abuse or addiction.

In Woo et al. (2017), 18 MMT patients at clinics in Ontario, Canada, participated in semi-structured interviews focused on their perceptions of stigma related to MMT. Many participants felt that people think more negatively of MMT compared with abstinence programs. A majority (89%) of participants felt that even those who know what methadone is think negatively of MMT patients. The most reported misconception was the notion that methadone gets patients “high” in the same way as with other opioids. Half reported that the stigma caused them to feel ashamed about being on MMT, and 30% of participants reported the stigma surrounding MMT has negatively affected their quality of treatment. Several admit it took them years between first hearing of methadone and actually deciding to join MMT. Some lowered their doses prematurely due to stigma, which caused them to go into withdrawal. In contrast, lower experiences of stigma were associated with higher retention.

Numerous researchers have examined the impact of stigmatizing attitudes toward people with OUD on treatment availability. In an extensive literature review, Livingston, Milne, Fang, and Amari (2012) concluded that stigmatizing attitudes held by both the public and treatment professionals alike reduced access to treatment. In a representative survey of Scottish adults, Matheson et al. (2014) found that MMT was the least preferred treatment and residential drug-free rehabilitation was the most preferred for a hypothetical friend or family member with OUD. Vestal (2016) reported the commonly held belief that MAT amounts to trading one addiction for another, and White (2012) stated that recovery with MAT is often not be considered legitimate or real recovery.

Unfortunately, stigmatizing attitudes toward both people with OUD and medication-assisted treatment are also common among physicians and other healthcare workers, and these negative views are thought to be a major reason that MAT availability is far below the necessary capacity (Vestal, 2016). Kennedy-Hendricks et al. (2016) surveyed primary care physicians in the U.S. and found that they held people with OUD responsible for both acquiring and recovering from their disorder. In a survey of 558 physicians, Huhn and Dunn (2017) found that the main reason given for being unwilling to prescribe buprenorphine was skepticism about the effectiveness of MMT or buprenorphine.

In summary, stigmatizing attitudes toward people with OUD and MAT are widespread and have a negative impact on disadvantaged people and treatment availability. The current project was designed to explore two research questions related to stigma associated with OUD and MAT: (a) To what extent do people who recover from OUD by using various forms of MAT or drug-free treatment get “credit” for their recovery, and (b) Can stigma toward various forms of MAT be reduced by presenting recovery narratives featuring these treatment approaches?

Research Question 1: Do People Treated with MAT Get Credit for Their Recovery?

The impetus for this research question was a study from the obesity literature (Mattingly, Stambush, & Hill, 2009). The researchers randomly assigned college student participants to see a picture of a young woman of normal weight who was described as having recently lost 25 pounds through either diet and exercise or weight loss surgery. Participants in the diet/exercise condition rated her as significantly more responsible for her weight loss than those in the surgery condition. Thus, participants did not give the woman as much credit for her weight loss if she had weight loss surgery versus diet and exercise.

The findings of Mattingly et al. appear to be similar to the reported discrediting of OUD recovery among people who choose MAT instead of drug-free treatment (e.g., White, 2012). People who are overweight are only slightly less stigmatized than people with substance use disorders (Vartanian, 2010), and both groups are blamed for their condition (Matheson et al., 2014).

Therefore, we hypothesized that participants who read about a person recovering from heroin use disorder via drug-free rehabilitation will rate that person as being more deserving of credit for his recovery than the same person recovering via MAT.

Research Question 2: Can MAT-Focused Recovery Narratives Reduce Stigmatizing Attitudes and Increase Support for MAT?

McGinty, Goldman, Pescosolido, and Barry (2015) suggested that one way to reduce stigma toward people with substance use disorders and increase support for policies to benefit them was to portray them as having responded successfully to treatment. Using a nationally representative online sample of American adults, the researchers randomly assigned participants to read brief vignettes of approximately 250 words about a White woman with heroin use

disorder or prescription opioid use disorder who either were untreated and symptomatic or who responded positively to treatment (MAT was vaguely suggested, but few details about the treatment and relevant policies were given). The researchers found that, compared to participants who read the untreated vignettes, those who read the recovery vignettes had less stigmatizing attitudes and greater perceptions of treatment effectiveness, although there was no significant impact on policy support. To date, McGinty et al. (2015) is the only study to measure the impact of recovery vignettes on stigma.

Therefore, we hypothesized that presenting detailed scenarios describing the development of heroin use disorder in a young man, followed by his realistic recovery (including a brief lapse) via MAT will result in reduced stigmatizing attitudes and more support for pro-MAT policies than the same scenario with recovery via drug-free rehabilitation.

Study 1: Drug-Free Treatment vs. MMT

To develop the stimulus materials, test a subset of the possible recovery scenarios, and meet the January deadline for abstract submission for the International Society for the Study of Drug Policy (ISSDP), we conducted a pilot study in December, 2017.

Method

Participants

Workers residing in the U.S. who were registered with Amazon's Mechanical Turk (Mturk) database were eligible to participate. A total of 402 participants completed the online survey and were paid \$1, but 23 were excluded for failing to respond affirmatively to the statement "I am reading and thinking carefully about each of the statements in this survey." The 379 participants retained came from 43 states and had a mean age of 34.83 ($SD = 10.12$). A slight majority (54%) was male; 78% identified themselves as White/Non-Hispanic, 8% as

African American, 7% as Hispanic/Latino, and 6% as Asian/Pacific Islander. The modal highest level of educational attainment, earned by 42% of the sample, was an undergraduate degree; 5% reported some graduate or professional school, and 12% had earned a graduate or professional degree. On a 7-point scale of political identity (1 = *strongly liberal*, 7 = *strongly conservative*), the mean was 3.41 ($SD = 1.75$), and the median was 3 (*slightly liberal*).

Measures and Procedure

From the MTurk list of available tasks, participants read a brief description of our study entitled “Opinions about Treating Heroin Use Disorder” (see Appendix A). Those who chose to participate were linked to Qualtrics, where they read the consent form and a background scenario describing a hypothetical young man (Jake) who developed heroin use disorder. Jake’s story embodied typical risk factors for developing heroin use disorder, such as a family and personal history of mental illness, low socioeconomic status linked to poor job prospects and academic struggles, which culminated in his surviving an overdose.

Next, participants were randomly assigned to read about Jake’s recovery from heroin use disorder through a residential drug-free rehabilitation (DFR) program or an outpatient methadone maintenance (MMT) program. In total, the background and treatment information was 609 (MMT) to 649 (DFR) words long. Each section of text was followed by two comprehension questions to confirm that participants had read the material carefully.

After reading the assigned passages, participants completed six Likert-scale items designed to test the hypothesis that Jake would get less credit for his recovery in the MMT condition (see Appendix A: Scenario-Linked Attitude Items). Next, they responded to a set of 17 items (Attributions of Responsibility and Blame for Heroin Use), developed by Sharpe (2015); these items are not relevant to the current study. Next, participants completed 10 items (General

Attitudes about Methadone Treatment), 8 of which were designed to test the hypothesis that the MMT recovery scenario would lead to less stigmatization and more support for methadone than the DFR recovery scenario (Items 8 and 9 assessed participants' familiarity with methadone and people with heroin use disorder).

Participants then responded to 11 manipulation check items. A majority (73%) missed no more than one of these items. We ultimately used only Item 6 (the attention check) to eliminate participants from the analyses. The manipulation check items were followed by demographic items and a debriefing. Participants were paid \$1 after navigating to the end of the survey.

Results

Hypothesis 1. To test the hypothesis that people receiving MMT will get less credit and will be seen as less responsible for their recovery, Cronbach's α was first calculated on the six Scenario-Linked Attitude Items after two items (1 and 6) were reverse-scored. The result ($\alpha = .45$) was too low to justify combining the items into a single index; therefore, two-tailed independent-samples t tests were conducted on each of the six items individually. All comparisons were nonsignificant; ps ranged from .388 to .724. Thus, Hypothesis 1 was not supported.

Hypothesis 2. To determine whether reading a recovery narrative featuring MMT would yield less stigmatizing attitudes and more support for MMT policies, Cronbach's α was first calculated on the eight items measuring general attitudes toward MMT (Items 1, 3, and 4 were first reverse-scored; Items 8 and 9 were omitted). The resulting Cronbach's α was .86; therefore, the general MMT items were combined into a single mean score for each participant, where scores closer to 5 indicated more positive attitudes toward MMT. A two-tailed independent-samples t test ($t [377] = 8.71, p < .001$) revealed that the means of the MMT and DFR groups

were significantly different: MMT $M = 3.68$, $SD = .72$; DFR $M = 3.03$, $SD = .73$. Thus, Hypothesis 2 was supported. To further explore the results, separate two-tailed independent-samples t tests were performed on each of the eight items; all ps were highly significant ($<.001$) and all means were in the expected direction. Thus, the hypothesis that a methadone-focused recovery narrative would reduce stigma and increase support for MMT was strongly supported.

Study 2: Comparison of Drug-Free Rehabilitation, Three Types of MAT, and No-Treatment Control

In this study, we replicated and extended the results of Study 1 by adding descriptions of recovery via buprenorphine (Suboxone®) and naltrexone (Vivitrol®), as well as a control condition describing the development of heroin use disorder but without a recovery narrative. The method and analyses paralleled and extended those of Study 1. The main hypotheses were the same as in Study 1, and the inclusion of a control condition and scenarios describing two more forms of MAT provided the opportunity to answer more fine-grained questions, such as whether there is less stigma associated with the opioid antagonist naltrexone (Vivitrol®) than with the agonist treatments MMT and buprenorphine (Suboxone®), and what participants' attitudes toward MAT and drug-free treatment are in the absence of any recovery scenario. We also explored the role of political identity in determining attitudes toward MAT.

Method

Participants

Workers living in the U.S. who were signed up with Amazon's Mechanical Turk (MTurk) database were eligible to participate. Study 1 participants were not permitted to respond to Study 2. A total of 998 participants completed the online survey in mid-April 2018 and were paid \$1 each. As in Study 1, participants were excluded for failing to agree with the same

screening statement used in Study 1: “I am reading and thinking carefully about each of the statements in this survey.” The 945 participants retained responded from 48 states and had a mean age of 35.79 ($SD = 10.12$). Slightly more than half (53%) were male; 77% self-identified as White/Non-Hispanic, 7% as African American, 6% as Hispanic/Latino, and 8% as Asian/Pacific Islander. The modal highest level of educational attainment, earned by 40% of the sample, was an undergraduate degree; 6% reported some graduate or professional school, and 14% had earned a graduate or professional degree.

Measures and Procedure

From the MTurk list of available tasks, participants read a brief description of our study entitled “Opinions about Treating Heroin Use Disorder” (see Appendix B). Those who chose to participate were linked to Qualtrics, where they read the consent form and the same background scenario used in Study 1, describing a hypothetical young man (Jake) who developed heroin use disorder.

Next, participants were randomly assigned to read about Jake’s recovery from heroin use disorder through a residential drug-free rehabilitation (DFR) program ($n = 184$), an outpatient methadone maintenance (MMT) program ($n = 185$), an outpatient buprenorphine program ($n = 192$), or via naltrexone ($n = 195$), as well as a control condition that details the development of heroin use disorder but without a recovery narrative ($n = 189$). The number of words in the scenarios ranged from 319 (buprenorphine) to 374 (naltrexone). Each section of text was followed by two comprehension questions to verify that participants had read the material carefully (see Appendix B for the five scenarios and their corresponding comprehension questions).

After reading the assigned passages, participants completed six Likert-scale items designed to test the hypothesis that Jake would get less credit for his recovery if it was medication-assisted (see Appendix B: Scenario-Linked Attitude Items). Because they did not read about Jake's recovery, participants in the Control Condition only answered Items 1 (Jake is to blame for having a heroin use disorder) and 5 (Being completely free of all drugs, legal and illegal, is necessary for Jake's recovery). Next, they responded to a set of 10 items depending on their assigned condition: General Attitudes about Methadone Treatment, General Attitudes about Buprenorphine (Suboxone) Treatment, General Attitudes about Naltrexone (Vivitrol) Treatment, or General Attitudes about Medication-Assisted Treatment (DFR and control conditions).

Participants then responded to 10 manipulation check items, followed by 23 items regarding their perceptions of blame for heroin use (Attributions of Responsibility and Blame for Heroin Use [ARBHU]). The ARBHU items were followed by demographic items and a debriefing. As in Study 1, the demographic questions for Study 2 included a single item asking about participants' political identity (1 = *strongly liberal*, 4 = *neutral [moderate]*, 7 = *strongly conservative*), drawn from research by Greenwald, Smith, Sriram, Bar-Anan, and Nosek (2009).

Results

Hypothesis 1. To test the hypothesis that people receiving MAT will receive less credit and will be seen as less responsible for their recovery, we first attempted to combine the six Scenario-Linked Attitude Items into a single scale. However, as in Study 1, the internal consistency was too low to justify scale creation (Cronbach's $\alpha = .48$). Therefore, one-way analyses of variance were conducted on each item separately. Responses to the statement "Being free of all drugs is necessary for recovery" revealed a significant difference between conditions; $F(4, 940) = 15.29, p < .001$. The least agreement with the statement was associated with the

control condition, and the most agreement was found in the drug-free rehab condition (see Table 1). A Tukey HSD post hoc test revealed that the control condition was significantly different from all other conditions. However, none of the other items designed to test Hypothesis 1 revealed any significant effects (all F s < 1.39, all p s > .238). Thus, Hypothesis 1 was only partially supported.

To further explore the hypothesis, we divided the participants into two groups based on their response to the political identity item. Participants who indicated that they were at least slightly liberal ($n = 494$) or at least slightly conservative ($n = 273$) were included in these exploratory analyses; participants who responded “neutral (moderate)” ($n = 176$) were excluded, along with two participants who did not respond to the political identity item.

A series of factorial analyses of variance were conducted on the six scenario-specific attitude items, using the scenario conditions and the two political categories as factors. All main effects for political identity except one were highly significant (see Table 2). Relative to liberals, conservatives blamed Jake for his heroin use disorder and believed that being free of all drugs, legal and illegal, is necessary for recovery. Conservatives were also less likely than liberals to believe that Jake should get credit for, and be proud of, his recovery, and they were less likely than liberals to agree that Jake’s recovery was real, meaningful recovery.

However, political identity did not interact significantly with the scenario variations. Therefore, our hypothesis that the method of recovery (MAT vs. drug-free rehabilitation) affects the blame or credit people in recovery receive remains largely unsupported.

Hypothesis 2. To examine the effects of MAT and drug-free recovery narratives, as well as a no-narrative control, on attitudes toward MAT, we first calculated Cronbach’s α on the eight items of the General Attitudes scales. See Appendix B for the specific wording of each scale,

which varied with the scenarios; as in Study 1, Items 1, 3, and 4 were first reverse-scored, and Items 8 and 9 were omitted. Cronbach's α was .85, indicating adequate internal consistency. Therefore, the MAT attitude items were combined and a mean score was computed for each participant.

A one-way analysis of variance comparing the five scenarios on this measure was highly significant, $F(4, 940) = 28.92, p < .001$. Tukey HSD post hoc tests showed that the mean score for the drug-free rehab scenario was significantly lower than the means for all the other conditions (see Table 3), indicating less support for MAT. The mean score for the control condition (no recovery scenario) was the next lowest, but it was not significantly different from the methadone condition. The Vivitrol and Suboxone scenarios led to the most support for MAT, but these were not significantly different from the methadone condition.

Because the overall ANOVA was robustly significant, we explored the results further by conducting one-way ANOVAs on each of the eight MAT attitude items separately (see Table 4). The same pattern of findings was obtained: all ps were $< .001$. An examination of the means consistently indicated that the least support for MAT came from the drug-free condition, Vivitrol and Suboxone led to the most support, and methadone and the control condition were associated with less support than the other forms of MAT but significantly more support than the drug-free condition.

Thus, scenarios featuring recovery via three different forms of MAT led to more support for MAT than a scenario featuring only drug-free rehabilitation. The control scenario, which described both drug-free and medication-assisted treatment and stated that MAT was more effective, led to levels of support similar to those of the MAT recovery scenarios.

In an additional exploratory analysis, a 5 (scenario condition) by 2 (liberal vs. conservative political identity) ANOVA was conducted on the mean MAT attitude measure. As we found in our Hypothesis 1 analyses, there was a highly significant main effect for political identity, $F(1, 757) = 50.72, p < .001$. Across all scenario conditions, conservatives were less supportive of MAT ($M = 3.49, SD = .76$) than liberals ($M = 3.84, SD = .72$), but there was no significant interaction between political identity and scenario condition.

Discussion

We tested two different hypotheses about factors that were potentially related to support for MAT. The first hypothesis was that people who recover through MAT would receive less credit for their recovery than those who recover through drug-free rehabilitation. This hypothesis was only partially supported; one of the six items designed to test it was significant. We found that political identity played a substantial role in judgements of blame for addiction and credit for recovery. Conservatives consistently showed higher levels of blame and lower levels of credit than liberals. However, because political identity did not interact with the type of recovery scenario, the addition of the political variable to the study did not yield more support for Hypothesis 1.

Our second hypothesis was that reading scenarios about MAT-based recovery would lead to more MAT support than a scenario about drug-free rehabilitation and a control condition that did not include a recovery narrative. Our results clearly showed that the drug-free recovery narrative led to less MAT support than the other conditions. In most analyses, the control condition was not significantly different from the three MAT scenarios in generating support for MAT. We conclude that informing people about MAT, regardless of whether the information

comes in the form of a recovery narrative or a non-narrative factual description, leads to significantly more support for MAT than informing them only about drug-free recovery.

Hypothesis 1 was derived from Mattingly et al.'s (2009) study of judgments about weight loss via dieting and exercise or surgery. The participants in that study attributed less responsibility for weight loss when it resulted from surgery rather than diet and exercise. We had expected similar findings when recovery came via MAT rather than drug-free rehabilitation, but we found little support for this hypothesis in either of our studies. The lack of significant findings in Study 1 may mean that participants gave more credit to people receiving methadone treatment and viewed them as more responsible for their recovery than we initially thought. In Study 2, we extended this hypothesis to people receiving three different forms of MAT and found similar results, with significant effects on only one of the six dependent measures (i.e., being completely free of all drugs, both legal and illegal, is necessary for recovery).

As an extension to Hypothesis 1, we also looked at political identity relative to feelings regarding treatment for addiction. We found that, compared to liberals, conservatives blamed Jake for his heroin use disorder and believed that being free of all drugs, legal and illegal, is necessary for recovery. We also found that conservatives were less likely than liberals to believe that Jake should get credit for, and be proud of, his recovery, and they were less likely than liberals to agree that Jake's recovery was real, meaningful recovery, regardless of how Jake recovered. More research is needed to explore the link between political identity and beliefs about substance use disorders and their treatment.

In both Studies 1 and 2, Hypothesis 2 was strongly supported. Presenting a recovery narrative featuring MAT led to significantly more support for MAT than a parallel recovery narrative featuring only drug-free rehabilitation.

We had also speculated that, based on McGinty et al.'s (2015) study, a control condition that did not tell a specific recovery story would lead to less support for MAT, and we designed Study 2, in part, to test this possibility. We found no support for this; in fact, in our tests of Hypothesis 1, participants assigned to the control condition were the least likely to agree that being completely drug-free is necessary for real recovery. In our tests of Hypothesis 2, we typically found that the attitudes toward MAT of participants assigned to the control condition were comparable to those assigned to the methadone condition and were only slightly less positive than the attitudes of those assigned to the buprenorphine and naltrexone conditions.

A description of a person's development of a substance use disorder with no additional information about how recovery can occur (McGinty et al.'s control condition) might lead to less support for a variety of treatment approaches, including MAT. However, our control condition, although it did not describe a specific recovery narrative, nevertheless provided clear information about drug-free rehabilitation and all three forms of MAT, and it also stated explicitly that MAT is more effective than drug-free treatment. Therefore, our control condition was not directly parallel to McGinty et al.'s control, and this may explain why our results differed from theirs.

In Study 2, we saw that the Vivitrol and Suboxone scenarios were associated with the most support for MAT, although these were usually not significantly different from the methadone condition. Overall, Vivitrol and Suboxone had the most support over methadone and the control. This parallels anecdotal reports from the community that both laypeople and medical professionals show more support for Vivitrol and Suboxone than methadone, as the former two are seen as less addictive and less harmful medications (P. Goddard, personal communication, May 2, 2018).

Both Studies 1 and 2 suggest that if medical caregivers hope to reduce the stigma around MAT among patients and their families, perhaps the best option is to present them with different stories of other patients who were successful in treating their addiction with MAT. Study 2 suggests, however, that a narrative about recovery may not be necessary, as the control condition's simple factual account was as effective as the MAT narratives in generating support for MAT.

The first limitation of our study, albeit a small one, is the fact that we had to exclude 23 participants from Study 1 and 53 participants from Study 2 for failing to agree with the same screening statement: "I am reading and thinking carefully about each of the statements in this survey." There is the chance that these participants could have had an impact on the results of both studies.

A related limitation is that MTurk workers are not representative of U.S. residents. According to Paolacci and Chandler (2014), MTurk workers in the U.S. are younger, better educated, and more liberal than the general population. Nevertheless, our sample is far more representative than the college student samples most often used in behavioral science research, and the fact that our respondents represented 48 states suggests we achieved a broad sample.

Perhaps the most serious limitations of our studies are that we do not know how long the attitudes expressed by our respondents will persist, nor do we know whether we would get similar effects if ordinary unpaid community residents were to be exposed to the same stimulus materials. Resolution of such questions requires additional research.

Overall, Study 1 revealed that when people are presented with recovery narratives, they are more likely to have less stigma toward methadone treatment and showed more support for methadone policies. In Study 2, we extended the research design to examine attitudes toward

other forms of medication-assisted treatment, including Vivitrol and Suboxone. The most important aspect of our study, and what is missing from the literature today, is the idea that getting people to read recovery narratives or even facts about the different types of treatment for addiction can result in less stigma and more support for those receiving the treatment. This can be crucial to bridging the gap between patients and their preferred choice of treatment as well as opening the minds of health care providers and family members. These recovery narratives or educational facts can change the face of stigma and help people with opioid use disorders have more freedom to choose the treatment that is right for them.

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Table 1

Effects of Scenario Condition on Specific Scenario-Related Attitudes

Dependent Measure	Drug-Free Rehab	Methadone	Buprenorphine (Suboxone)	Naltrexone (Vivitrol)	Control Condition
Jake is to blame for his heroin use disorder	3.34 (1.07)	3.39 (1.07)	3.40 (1.11)	3.46 (1.07)	3.21 (1.15)
Jake should get credit for his recovery	4.21 (0.81)	4.21 (0.88)	4.12 (0.89)	4.11 (0.88)	---
Jake's recovery is real, meaningful	4.34 (0.72)	4.28 (0.84)	4.32 (0.81)	4.28 (0.79)	---
Months without illegal drugs should count as "clean time"	4.09 (0.86)	4.03 (0.86)	4.05 (0.99)	4.09 (0.84)	---
Being completely drug free is necessary for Jake's recovery***	4.22 _a (0.99)	4.10 _{ab} (1.11)	3.74 _{bc} (1.15)	3.82 _c (1.19)	3.39 _d (1.27)
Jake should be proud of his recovery	4.62 (0.65)	4.52 (0.81)	4.51 (0.75)	4.58 (0.62)	---

Note. Cell means (standard deviations). Ratings are on 5-point Likert scales (1 = *Strongly Disagree*, 5 = *Strongly Agree*). Only the item "Being completely drug free is necessary for Jake's recovery" was statistically significant, $F(4, 940) = 15.29, p < .001$. Different subscripts indicate significant differences on the Tukey post hoc test ($p < .05$).

Table 2

Main Effects of Political Identity on Specific Scenario-Related Attitudes

Dependent Measure	Liberal	Conservative	<i>F</i> (<i>df</i>)	<i>p</i>
Jake is to blame for his heroin use disorder	3.11 (1.10)	3.80 (0.94)	75.19 (1, 757)	<.001
Jake should get credit for his recovery	4.27 (0.81)	4.06 (0.88)	9.54 (1, 607)	.002
Jake's recovery is real, meaningful	4.41 (0.73)	4.22 (0.82)	9.10 (1, 608)	.003
Months without illegal drugs should count as "clean time"	4.17 (0.83)	4.05 (0.90)	3.28 (1, 608)	.071
Being completely drug free is necessary for Jake's recovery	3.71 (1.24)	4.03 (1.09)	13.02 (1, 757)	<.001
Jake should be proud of his recovery	4.68 (0.59)	4.43 (0.77)	19.34 (1, 608)	<.001

Note. Cell means (standard deviations). Ratings are on 5-point Likert scales (1 = *Strongly Disagree*, 5 = *Strongly Agree*).

Table 3

Effect of Scenario Condition on Overall Attitude toward Medication-Assisted Treatment

Dependent Measure	Drug-Free Rehab	Methadone	Buprenorphine (Suboxone)	Naltrexone (Vivitrol)	Control Condition
Overall Attitude toward MAT	3.21 _a (0.73)	3.71 _{bc} (0.70)	3.87 _c (0.69)	3.90 _c (0.68)	3.66 _b (0.72)

Note. Cell means (standard deviations). Ratings are on 5-point Likert scales (1 = *Strongly Disagree*, 5 = *Strongly Agree*). The overall effect of scenario condition was highly significant, $F(4, 940) = 28.92, p < .001$. Different subscripts indicate significant differences on the Tukey post hoc test ($p < .05$).

Table 4

Effects of Scenario Condition on Attitudes toward Medication-Assisted Treatment (Individual Items)

Dependent Measure	Drug-Free Rehab	Methadone	Buprenorphine (Suboxone)	Naltrexone (Vivitrol)	Control Condition
MAT is just trading one addiction for another	3.03 _a (1.11)	2.58 _b (1.14)	2.42 _{bc} (1.10)	2.15 _c (1.00)	2.66 _b (1.16)
People getting MAT will commit fewer crimes	3.18 _a (0.91)	3.69 _{bc} (0.91)	3.82 _c (0.93)	3.68 _{bc} (0.84)	3.54 _b (0.88)
Abstinence is the only acceptable treatment option	3.02 _a (1.28)	2.48 _b (1.30)	2.36 _b (1.22)	2.30 _b (1.21)	2.47 _b (1.19)
Cost of MAT outweigh benefits	2.67 _a (1.07)	2.32 _b (1.24)	2.15 _b (1.18)	2.16 _b (1.13)	2.37 _{ab} (1.11)
MAT should be widely available	3.35 _a (1.07)	3.98 _b (0.96)	4.19 _b (0.86)	4.13 _b (0.91)	3.94 _b (0.87)
Using MAT for addiction is same as using meds for diabetes, hypertension	2.92 _a (1.13)	3.39 _b (1.16)	3.55 _b (1.17)	3.58 _b (1.16)	3.35 _b (1.18)
MAT reduces overdose risk	3.61 _a (0.90)	4.11 _{bc} (0.90)	4.29 _c (0.86)	4.34 _c (0.73)	3.99 _b (0.90)
I'd want addicted loved one to get MAT	3.32 _a (1.04)	3.93 _b (0.95)	4.01 _b (0.94)	4.05 _b (0.87)	3.90 _b (0.97)

Note. Cell means (standard deviations). Ratings are on 5-point Likert scales (1 = *Strongly*

Disagree, 5 = *Strongly Agree*). Only the item “Being completely drug free is necessary for Jake’s

recovery” was statistically significant, $F(4, 940) = 15.29, p < .001$. Different subscripts indicate significant differences on the Tukey post hoc test ($p < .05$).

Appendix A: Study 1 Materials

Study Title: Opinions about Treating Heroin Use Disorder

This protocol was a Qualtrics-based anonymous survey that was posted on the MTurk database and collected data from 402 MTurk workers who reside in the U.S. The Qualtrics survey was fully anonymized (no IP address or location information was collected). Participants were paid \$1 each through MTurk for their work.

This is what MTurk workers saw when they perused the list of available tasks:

Title: Opinions about Treating Heroin Use Disorder (10-minute survey)

Study description: This anonymous survey asks your opinions about treatment methods for people with heroin use disorder. You will earn \$1 for your participation.

Link to the survey: [the link to the survey in Qualtrics will appear here]

Consent Form

Study Title: Opinions about Treating Heroin Addiction

Principal Investigator: Perilou Goddard, Ph.D. (goddard@nku.edu), 859-572-5463

INTRODUCTION

We are conducting this research to better understand what people think about the treatment of heroin use disorder. You will read a brief scenario about a hypothetical person and will be asked some questions about your opinions and what you read. If you decide to participate, you can change your mind at any time and simply stop answering questions. You can also skip questions if you don't want to answer them. The study is anonymous, so no one will be able to identify you from your responses.

WHY ARE WE DOING THIS RESEARCH?

We are conducting this research to better understand the factors that influence the kinds of treatment that are available for heroin use disorder. The results of this study, along with other similar studies, may lead to better ways to treat substance use disorders.

WHO IS IN CHARGE OF THE RESEARCH?

Dr. Perilou Goddard is in charge of this study. Psychology senior Megan Carroll will also be a researcher in the study and will see your anonymous survey responses. Because the study is anonymous, neither Dr. Goddard nor Megan Carroll will know who gave specific answers.

WHO SHOULD NOT BE IN THE STUDY? If you aren't at least 18 years old yet, you should not participate in this study.

WHAT WILL HAPPEN IN THE STUDY? If you agree to participate, you will click on a link to the anonymous survey. You'll read a scenario and answer some questions. Completing the study should take no more than 10 minutes.

WHAT WILL HAPPEN IN THE STUDY?

If you agree to participate, you will click on a link to the anonymous survey. You'll read a scenario and answer some questions. Completing the study should take no more than 10 minutes.

WHAT ARE THE GOOD THINGS THAT CAN HAPPEN FROM THIS RESEARCH?

You will earn \$1 (through Mturk) for participating in the study.

In addition, we are conducting this research to better understand the factors that influence the treatment of heroin use disorder. The results of this study may lead to better ways to treat it.

WHAT ARE THE BAD THINGS THAT CAN HAPPEN FROM THIS RESEARCH?

You may be asked questions that make you uncomfortable, such as your opinions about people who have heroin use disorder. Your responses are anonymous and no one will ever be able to trace your responses to you. You do not need to answer any questions that you do not wish to answer. At the end of the study, you'll get information about where to get help if you are worried about heroin use by yourself or others.

WHAT OTHER CHOICES ARE THERE?

Instead of being in this study, you can choose not to be in it.

HOW WILL INFORMATION ABOUT YOU BE KEPT PRIVATE?

You won't put your name anywhere on the survey. Your responses are ANONYMOUS and can't be traced to you by anyone, not even the researchers themselves. If you feel that the answer to any question may reveal your identity, you are free to skip those questions.

Only group information will be collected in this survey. No individual responses of any kind will ever be used in presentations or publications of this research. The data file that comes from these surveys will only exist in electronic form and will be stored securely on a password-protected server. Data will be kept for 6 years.

You'll complete the survey on a computer or smart device (e.g., smart phone, tablet) at a time and place that YOU choose. We recommend that you complete the survey in private so that other people won't see your responses.

WILL YOU BE PAID TO BE IN THIS RESEARCH STUDY?

Yes, you will be paid \$1 through MTurk for your participation.

WHO DO YOU CALL IF YOU HAVE QUESTIONS OR PROBLEMS?

For questions, concerns, or complaints about this research study you can contact Dr. Perilou Goddard (MEP 355, 859-572-5463, goddard@nku.edu).

If you would like to talk to someone that is not part of the research staff or if you have general questions about your research study rights or questions, concerns, or complaints about the research, you can call the Chair of the Institutional Review Board, Andrea Lambert-South, Ph.D., at 859-572-6615 or irbchair@nku.edu.

Please choose one of the following options:

- a. I consent to participate.
- b. I do not consent to participate.

Scenario Background

[All participants who consent read this page]

Please read the information below. You'll be asked some questions about it and your opinions later:

Jake grew up in a working class neighborhood in a town where good jobs are hard to find. His parents did their best to take care of Jake and his siblings, but money was always tight. Jake's mom was disabled in a car accident when Jake was 10, and his father struggled with alcohol and drugs. Jake tried hard in school but he wasn't a very good student. He suffered from depression as a teen, but his symptoms were never recognized and he didn't receive treatment.

When Jake was a junior in high school, a friend started taking prescription opioid pain pills to get high, and he offered some to Jake. Jake really liked the feeling they gave him. He felt like all his troubles disappeared, at least temporarily, when he took the pills. He started using them more often, but they were expensive and he started stealing to get money for the pills.

Over the next several months, Jake spent more and more time taking pain pills or committing crimes to get money to buy them. He flunked all his classes and dropped out of high school. He and his friend soon switched from pain pills to heroin because heroin produced the same kind of high but was cheaper and easier to get. Heroin was riskier than pills because they never knew how strong a batch of heroin would be or what other stuff might be mixed in with the heroin, but Jake didn't think he had any choice but to switch.

And then one afternoon, Jake overdosed. He woke up in the ambulance on the way to the hospital. The doctor at the emergency room said he was lucky to be alive.

For each of the following items, choose the number that corresponds to your belief about the statement:

1	2	3	4	5
Sure this is NOT true		Not sure whether this is true or not		Sure this IS true

-
1. There were plenty of good jobs in the town where Jake grew up.
 2. Jake suffered from untreated depression when he was a teenager.

Recovery Scenarios (Drug-Free Rehab or Methadone)

[At this point, participants will be randomly assigned through Qualtrics to read the Drug-Free Rehab or Methadone Version]

[Drug-Free Rehab Version]

The overdose was a wake-up call for Jake. A social worker talked to him while he was in the ER and made arrangements for him to enter a residential drug treatment program the next day.

The first few weeks in the drug treatment center were really hard. Jake experienced painful withdrawal symptoms for several days and often had powerful cravings for heroin. He had to learn a whole new set of rules, and it was hard for him to grasp what the counselors and his fellow patients were trying to teach him about how to live without heroin. But gradually, he got used to the routine of the treatment center and started to feel hopeful about the future. Although there are medications that can treat heroin use disorder, Jake's program does not allow anyone to take such medications—The program's philosophy is that being completely free of all drugs, legal and illegal, is necessary for full recovery. He learned that he needed to change his whole outlook on life to stay away from heroin and opioid pain pills.

In addition to group sessions, Jake met with his individual counselor every week, and their sessions helped him deal with his depression. He also had to take urine tests at random intervals to check for the presence of heroin and other drugs.

After a few weeks in treatment, he slipped and used heroin again. Once again, he overdosed and was saved by a friend who had Narcan, an antidote medication. Jake felt guilty about his slip and talked to his counselor about it right away.

After several months in the residential treatment center, Jake transitioned to outpatient treatment a couple of times each week. He continued to see his counselor, and his random urine tests proved that he was no longer using heroin or any other illegal drugs. He continues to go to meetings and group sessions at the treatment center frequently and expects to do so for the foreseeable future. Jake is now working on his GED and has a job as a cook in a local restaurant. He's hoping to go to culinary school in the future to become a chef.

For each of the following items, choose the number that corresponds to your belief about the statement:

1	2	3	4	5
Sure this is NOT true		Not sure whether this is true or not		Sure this IS true

3. Jake received methadone-assisted treatment.

4. When Jake slipped and used heroin again, he overdosed but was saved by a friend.

[Methadone Version]

The overdose was a wake-up call for Jake. A social worker talked to him while he was in the ER and made arrangements for him to enter a methadone treatment program the next day.

The first few weeks in methadone-assisted treatment were really hard. The clinic doctors had to find the right dose of methadone for Jake, and he had to learn a whole new set of rules about how the methadone and counseling would help him live without heroin. But gradually, he got used to going to the methadone clinic every morning for his medication and started to feel hopeful about the future. The methadone kept him from having painful withdrawal symptoms and reduced his powerful cravings for heroin.

In addition to taking methadone every day at the clinic, Jake met with his individual counselor every week, and their sessions helped him deal with his depression. He also had to take urine tests at random intervals to check for the presence of heroin and other drugs.

After a few weeks in treatment, he slipped and used heroin again. The methadone in his system blocked the heroin high and protected him from overdosing. He felt guilty about his slip and talked to his counselor about it right away.

After several months of going to the methadone clinic every day for his medication, Jake earned the privilege of getting a few days' worth of methadone to take home so he didn't have to come to the clinic every day. He continued to see his counselor, and his random urine tests proved that he was no longer using heroin or any other illegal drugs. He plans to start gradually decreasing his dose of methadone over the coming months with the goal of stopping methadone eventually. Jake is now working on his GED and has a job as a cook in a local restaurant. He's hoping to go to culinary school in the future to become a chef.

For each of the following items, choose the number that corresponds to your belief about the statement:

1	2	3	4	5
Sure this is NOT true		Not sure whether this is true or not		Sure this IS true

3. Jake received drug-free rehabilitation treatment.

4. When Jake slipped and used heroin again, the methadone in his system protected him from overdosing.

Dependent Variables

[From this point onward, all participants responded to the same materials]

Scenario-Linked Attitude Items

For each of the following statements, choose the number that corresponds to your personal attitude or opinion:

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

-
- 1.* Jake is to blame for having a heroin use disorder.
 2. Jake should get the credit for his recovery from heroin use disorder.
 3. Jake's recovery is real, meaningful recovery.
 4. The months when Jake has had no illegal drugs in his system should count as "clean" (or drug-free) time.
 - 5.* Being completely free of all drugs, legal and illegal, is necessary for Jake's recovery.
 6. Jake should be proud of his recovery.

*Indicates that the item was recoded before combining it with the other items to attempt to form a scale.

Cronbach's $\alpha = .45$; therefore, items were not combined into a single scale but were analyzed separately.

Attributions of Responsibility and Blame for Heroin Use (ARBHU)

For each of the following statements, choose the number that corresponds to your personal attitude or opinion:

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

-
1. People with a heroin use disorder are responsible for their condition.
 2. Heroin use disorder is caused by biological changes in the brain.
 3. Having a heroin use disorder is under the individual's control.
 4. Heroin use disorder is a biological disorder.
 5. If people develop a heroin use disorder, it's their own fault.
 6. Heroin use disorder is a moral weakness.
 7. Heroin use disorder is a disease.
 8. People who have a heroin use disorder can just quit using the drug if they really want to.
 9. People who have a heroin use disorder are not to blame for their disorder.
 10. Heroin use disorder is a brain disease.
 11. To recover from heroin use disorder, people just need to pull themselves together.
 12. People with a heroin use disorder have only themselves to blame.
 13. Heroin use disorder is caused in part by one's genes.
 14. Having good job prospects increases the risk of heroin use disorder.
 15. Children who are mistreated are more likely to develop a heroin use disorder as adults.
 16. If they're untreated, mental disorders like depression increase the risk of heroin use disorder.
 17. Teenagers are more likely than adults to develop heroin use disorder.

General Attitudes about Methadone Treatment (not linked specifically to the scenarios)

For each of the following statements, choose the number that corresponds to your personal attitude or opinion:

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

-
- 1.* Methadone-assisted treatment is just trading one addiction for another.
 2. If people with a serious heroin use disorder receive methadone-assisted treatment, they will commit fewer crimes.
 - 3.* Abstinence (being completely free of all drugs, including methadone) is the only acceptable treatment option for people who have a serious heroin use disorder.
 - 4.* The costs of methadone-assisted treatment outweigh the benefits.
 5. Methadone-assisted treatment should be widely available to people with heroin use disorder.
 6. Using methadone to treat heroin use disorder is the same as using medication to treat Type II diabetes or high blood pressure.
 7. Methadone treatment reduces the risk of overdose death.
 8. I don't know much about methadone treatment.
 9. I personally know people who have suffered from heroin use disorder.
 10. If someone I cared about had a heroin use disorder, I would want that person to get methadone-assisted treatment.

*Indicates that the item was recoded before combining it with the other items to attempt to form a scale.

Cronbach's $\alpha = .86$; therefore, all items except 8 and 9 were combined into a single scale and a mean score was used for analyses.

Manipulation Check

For each of the following items, choose the number that corresponds to your belief about the statement. Please note that the RESPONSE OPTIONS (below) HAVE CHANGED:

1	2	3	4	5
Sure this is NOT true		Not sure whether this is true or not		Sure this IS true

-
1. Jake's mom was disabled in a car accident when Jake was a boy.
 2. Jake's dad struggled with alcohol and drug problems when Jake was young.
 3. Jake was a good student in school.
 4. Jake committed crimes to get money to buy drugs.
 5. Jake started using heroin because it was cheaper and more available than pain pills.
 - *6. I am reading and thinking carefully about each of the statements in this survey.
 7. Methadone made Jake's cravings for heroin worse.
 8. Jake experienced painful withdrawal symptoms for several days when he started treatment.
 9. Heroin and prescription pain pills made Jake feel like all his troubles disappeared, at least temporarily.
 10. While in treatment, Jake slipped and used heroin.
 11. After several months in treatment, random urine tests showed that Jake was no longer using illegal drugs.

*Participants who failed to respond 4 or 5 on this item were eliminated from the analyses.

Demographic Questions

1. Age _____
2. Gender _____ Male _____ Female _____ Other/Non-binary _____ I prefer not to answer
3. Highest level of education attained
_____ Some high school
_____ GED or high school degree
_____ Some college or technical/professional training
_____ Undergraduate degree
_____ Some graduate or professional school
_____ Graduate or professional degree
_____ Other
4. Race
_____ African American, Non-Hispanic
_____ Hispanic/Latino
_____ White, Non-Hispanic
_____ Asian/Pacific Islander
_____ American Indian/Native Alaskan
_____ Other
5. Which of the following best describes your political identity?
_____ Strongly liberal
_____ Moderately liberal
_____ Slightly liberal
_____ Neutral (moderate)
_____ Slightly conservative
_____ Moderately conservative
_____ Strongly conservative
6. In what state do you currently reside? (drop-down menu)

**Debriefing for MTurk Participants:
"Opinions about Treating Heroin Use Disorder" Research Study**

Thank you for participating in the "Opinions about Treating Heroin Use Disorder" research study, designed by Dr. Perilou Goddard and Megan Carroll. Anecdotal evidence suggests widespread stigma toward methadone treatment, but there are no scientifically sound studies demonstrating it. This research study is designed to assess people's opinions about methadone-assisted treatment and drug-free rehab and to determine if the stigma toward methadone can be empirically verified. You were randomly assigned to read about a hypothetical person ("Jake") who developed a heroin use disorder and found recovery either through drug-free rehab or methadone treatment. We hypothesized that Jake will get more credit for his recovery if it occurred via drug-free treatment and that methadone-assisted recovery won't be considered "real" recovery, despite the strong scientific evidence for the effectiveness of methadone.

All questionnaire responses are completely ANONYMOUS. It is not possible to connect your responses to any information that can reveal your identity. The data file generated in this study will NEVER contain any individually identifying information.

You will earn \$1 for your participation.

If participating in this study raised any concerns for you about drug use or other problems, please consider contacting your primary care physician or local mental health agency. To locate treatment resources near you, contact the Substance Abuse and Mental Health Services Administration (SAMHSA)'s free and confidential National Helpline at 1-800-662-HELP (4357) (TDD: 1-800-487-4889) or use their online treatment locator at <https://findtreatment.samhsa.gov/>

If you'd like to find out the study's results when they become available, or if you have any questions or concerns about your participation, please feel free to contact Dr. Perilou Goddard: goddard@nku.edu.

Thank you very much for your help with this study. We sincerely appreciate your time and effort.

Appendix B: Study 2 Materials

Study Title: Opinions about Treating Heroin Use Disorder

[Note: Using the same title as Study 1 prevented Mturk workers who participated in Study 1 from participating in this study.]

This protocol was a Qualtrics-based anonymous survey that was posted on the MTurk database April 11-14, 2018, collecting data from 998 MTurk workers who reside in the U.S. Like Study 1, this Qualtrics survey was fully anonymized (no IP address or location information will be collected). However, due to changes in NKU's IRB protocol, the consent and debriefing were changed from "anonymous" to "confidential." Participants were paid \$1 each through MTurk for their work.

This is what MTurk workers saw when they perused the list of available tasks:

Title: Opinions about Treating Heroin Use Disorder (10-minute survey)

Study description: This anonymous survey asks your opinions about treatment methods for people with heroin use disorder. You will earn \$1 for your participation.

Link to the survey: [the link to the survey in Qualtrics will appear here]

Consent Form

Study Title: Opinions about Treating Heroin Use Disorder

Principal Investigator: Perilou Goddard, Ph.D. (goddard@nku.edu), 859-572-5463

Co-Investigator: Megan Carroll

Department of Psychological Science, Northern Kentucky University

INTRODUCTION

We are conducting this research to better understand what people think about the treatment of heroin use disorder. You will read a brief scenario about a hypothetical person and will be asked some questions about your opinions and what you read. If you decide to participate, you can change your mind at any time and simply stop answering questions. You can also skip questions if you don't want to answer them. The study is confidential. No one will be able to identify you from your responses. Your MTurk worker ID will only be used to pay you for your work--it will not be included in any data files associated with the study.

WHY ARE WE DOING THIS RESEARCH?

We are conducting this research to better understand the factors that influence the kinds of treatment that are available for heroin use disorder. The results of this study, along with other similar studies, may lead to better ways to treat substance use disorders.

WHO IS IN CHARGE OF THE RESEARCH?

Dr. Perilou Goddard is in charge of this study. Psychology senior Megan Carroll will also be a researcher in the study and will see your survey responses. The study is confidential, but neither Dr. Goddard nor Megan Carroll will know who gave specific answers. Your MTurk worker ID will only be used to pay you for your work--it will not be included in any data files associated with the study.

WHO SHOULD NOT BE IN THE STUDY? If you aren't at least 18 years old yet, you should not participate in this study.

WHAT WILL HAPPEN IN THE STUDY? If you agree to participate, you will click on a link to the survey. You'll read a scenario and answer some questions. Completing the study should take no more than 10 minutes.

WHAT WILL HAPPEN IN THE STUDY?

If you agree to participate, you will click on a link to the survey. You'll read a scenario and answer some questions. Completing the study should take no more than 10 minutes.

WHAT ARE THE GOOD THINGS THAT CAN HAPPEN FROM THIS RESEARCH?

You will earn \$1 (through MTurk) for participating in the study.

In addition, we are conducting this research to better understand the factors that influence the treatment of heroin use disorder. The results of this study may lead to better ways to treat it.

WHAT ARE THE BAD THINGS THAT CAN HAPPEN FROM THIS RESEARCH?

You may be asked questions that make you uncomfortable, such as your opinions about people who have heroin use disorder. Your responses are confidential and no one will trace your responses to you. You do not need to answer any questions that you do not wish to answer. At the end of the study, you'll get information about where to get help if you are worried about heroin use by yourself or others.

WHAT OTHER CHOICES ARE THERE?

Instead of being in this study, you can choose not to be in it.

HOW WILL INFORMATION ABOUT YOU BE KEPT PRIVATE?

You won't put your name anywhere on the survey. Your responses are confidential and won't be traced to you by anyone. Your MTurk worker ID will not be connected with your survey responses and will not be included in any data files associated with this study--it will only be used to pay you for your work. If you feel that the answer to any question may reveal your identity, you are free to skip those questions.

Only group information will be collected in this survey. No individual responses of any kind will ever be used in presentations or publications of this research. The data file that comes from these surveys will only exist in electronic form and will be stored securely on a password-protected server. Data will be kept for 6 years.

You'll complete the survey on a computer or smart device (e.g., smart phone, tablet) at a time and place that YOU choose. We recommend that you complete the survey in private so that other people won't see your responses.

WILL YOU BE PAID TO BE IN THIS RESEARCH STUDY?

Yes, you will be paid \$1 through MTurk for your participation.

WHO DO YOU CALL IF YOU HAVE QUESTIONS OR PROBLEMS?

For questions, concerns, or complaints about this research study you can contact Dr. Perilou Goddard (MEP 355, 859-572-5463, goddard@nku.edu).

If you would like to talk to someone that is not part of the research staff or if you have general questions about your research study rights or questions, concerns, or complaints about the research, you can call the Chair of the Institutional Review Board, Andrea Lambert South, Ph.D., at 859-572-6615 or irbchair@nku.edu.

Please choose one of the following options:

- a. I consent to participate.
- b. I do not consent to participate.

Scenario Background

[All participants who consented read this page]

Please read the information below. You'll be asked some questions about it and your opinions later:

Jake grew up in a working class neighborhood in a town where good jobs are hard to find. His parents did their best to take care of Jake and his siblings, but money was always tight. Jake's mom was disabled in a car accident when Jake was 10, and his father struggled with alcohol and drugs. Jake tried hard in school but he wasn't a very good student. He suffered from depression as a teen, but his symptoms were never recognized and he didn't receive treatment.

When Jake was a junior in high school, a friend started taking prescription opioid pain pills to get high, and he offered some to Jake. Jake really liked the feeling they gave him. He felt like all his troubles disappeared, at least temporarily, when he took the pills. He started using them more often, but they were expensive and he started stealing to get money for the pills.

Over the next several months, Jake spent more and more time taking pain pills or committing crimes to get money to buy them. He flunked all his classes and dropped out of high school. He and his friend soon switched from pain pills to heroin because heroin produced the same kind of high but was cheaper and easier to get. Heroin was riskier than pills because they never knew how strong a batch of heroin would be or what other stuff might be mixed in with the heroin, but Jake didn't think he had any choice but to switch.

And then one afternoon, Jake overdosed. He woke up in the ambulance on the way to the hospital. The doctor at the emergency room said he was lucky to be alive.

For each of the following items, choose the number that corresponds to your belief about the statement:

1	2	3	4	5
Sure this is NOT true		Not sure whether this is true or not		Sure this IS true

1.* There were plenty of good jobs in the town where Jake grew up.

2.* Jake suffered from untreated depression when he was a teenager.

*"I prefer not to answer" was an additional option for these items.

Recovery and Control Scenarios

[At this point, participants were randomly assigned through Qualtrics to read one of four versions of recovery scenarios (Drug-Free Rehab, Methadone, Buprenorphine, or Naltrexone) OR the control condition (brief factual information about each of the four treatment methods). The Drug-Free Rehab and Methadone scenario versions were identical to Study 1; one of the immediate post-scenario manipulation check questions was revised since Study 1.]

[Drug-Free Rehab Version]

The overdose was a wake-up call for Jake. A social worker talked to him while he was in the ER and made arrangements for him to enter a residential drug treatment program the next day.

The first few weeks were really hard. Jake experienced painful withdrawal symptoms for several days and often had powerful cravings for heroin. He had to learn a whole new set of rules, and it was hard for him to grasp what the counselors and his fellow patients were trying to teach him about how to live without heroin. But gradually, he got used to the routine of the treatment center and started to feel hopeful about the future. Although there are medications that can treat heroin use disorder, Jake's program does not allow anyone to take such medications—The program's philosophy is that being completely free of all drugs, legal and illegal, is necessary for full recovery. He learned that he needed to change his whole outlook on life to stay away from heroin and opioid pain pills.

In addition to group sessions, Jake met with his individual counselor every week, and their sessions helped him deal with his depression. He also had to take urine tests at random intervals to check for the presence of heroin and other drugs.

After a few weeks in treatment, he slipped and used heroin again. Once again, he overdosed and was saved by a friend who had Narcan, an antidote medication. Jake felt guilty about his slip and talked to his counselor about it right away.

After several months in the residential treatment center, Jake transitioned to outpatient treatment a couple of times each week. He continued to see his counselor, and his random urine tests proved that he was no longer using heroin or any other illegal drugs. He continues to go to meetings and group sessions at the treatment center frequently and expects to do so for the foreseeable future. Jake is now working on his GED and has a job as a cook in a local restaurant. He's hoping to go to culinary school in the future to become a chef.

For each of the following items, choose the number that corresponds to your belief about the statement:

1	2	3	4	5
Sure this is NOT true		Not sure whether this is true or not		Sure this IS true

3.* Jake received methadone-assisted treatment.

4.* When Jake slipped and used heroin again, he overdosed but was saved by a friend.

*"I prefer not to answer" was an additional option for these items.

[Methadone Version]

The overdose was a wake-up call for Jake. A social worker talked to him while he was in the ER and made arrangements for him to enter a methadone treatment program the next day.

The first few weeks were really hard. The clinic doctors had to find the right dose of methadone for Jake, and he had to learn a whole new set of rules about how the methadone and counseling would help him live without heroin. But gradually, he got used to going to the methadone clinic every morning for his medication and started to feel hopeful about the future. The methadone didn't make him high, but it kept him from having painful withdrawal symptoms and reduced his powerful cravings for heroin.

In addition to taking methadone every day at the clinic, Jake met with his individual counselor every week, and their sessions helped him deal with his depression. He also had to take urine tests at random intervals to check for the presence of heroin and other drugs.

After a few weeks in treatment, he slipped and used heroin again. The methadone in his system blocked the heroin high and protected him from overdosing. He felt guilty about his slip and talked to his counselor about it right away.

After several months of going to the methadone clinic every day for his medication, Jake earned the privilege of getting a few days' worth of methadone to take home so he didn't have to come to the clinic every day. He continued to see his counselor, and his random urine tests proved that he was no longer using heroin or any other illegal drugs. He plans to start gradually decreasing his dose of methadone over the coming months with the goal of stopping methadone eventually. Jake is now working on his GED and has a job as a cook in a local restaurant. He's hoping to go to culinary school in the future to become a chef.

For each of the following items, choose the number that corresponds to your belief about the statement:

1	2	3	4	5
Sure this is NOT true		Not sure whether this is true or not		Sure this IS true

3.* Jake treatment did not involve taking any medications—the treatment was totally drug-free.

4.* When Jake slipped and used heroin again, the methadone in his system protected him from overdosing.

*"I prefer not to answer" was an additional option for these items.

[Buprenorphine Version]

The overdose was a wake-up call for Jake. A social worker talked to him while he was in the ER and made arrangements for him to enter a Suboxone treatment program the next day.

The first few weeks were really hard. The doctor had to find the right dose of Suboxone for Jake, and he had to learn a whole new set of rules about how Suboxone and counseling would help him live without heroin. But gradually, he got used to Suboxone, and he started to feel hopeful about the future. The Suboxone didn't make him high, but it kept him from having painful withdrawal symptoms and reduced his powerful cravings for heroin.

In addition to taking Suboxone every day at home, Jake met with his individual counselor every week, and their sessions helped him deal with his depression. He also had to take urine tests at random intervals to check for the presence of heroin and other drugs.

After a few weeks in treatment, he slipped and used heroin again. The Suboxone in his system blocked the heroin high and protected him from overdosing. He felt guilty about his slip and talked to his counselor about it right away.

After seeing his doctor every week for a couple of months until his dose was stabilized, Jake was able to get a prescription for a month's worth of Suboxone at a time, so he didn't have to see the doctor every week. He continued to see his counselor, and his random urine tests proved that he was no longer using heroin or any other illegal drugs. He plans to start gradually decreasing his dose of Suboxone over the coming months with the goal of stopping Suboxone eventually. Jake is now working on his GED and has a job as a cook in a local restaurant. He's hoping to go to culinary school in the future to become a chef.

For each of the following items, choose the number that corresponds to your belief about the statement:

1	2	3	4	5
Sure this is NOT true		Not sure whether this is true or not		Sure this IS true

3.* Jake treatment did not involve taking any medications—the treatment was totally drug-free.

4.* When Jake slipped and used heroin again, the methadone in his system protected him from overdosing.

*"I prefer not to answer" was an additional option for these items.

[Naltrexone Version]

The overdose was a wake-up call for Jake. A social worker talked to him while he was in the ER and made arrangements for him to see a doctor about entering a Vivitrol treatment program the next day.

The first few days were really hard. Jake's doctor explained that Vivitrol blocks the effects of heroin and other opioid drugs like it; because of this, Jake's body had to be completely free of heroin before he could get his first dose of Vivitrol. Therefore, Jake had to endure a week of painful withdrawal symptoms, including vomiting, diarrhea, and aches and pains that felt like "super flu." His craving for heroin during this time was the worst it had ever been, and Jake's family did everything they could to convince him not to use heroin. Finally, after all the drugs were out of his system, Jake's doctor gave him an injection of Vivitrol that would last a month. He had to learn a whole new set of rules about how Vivitrol and counseling together would help him live without heroin. Gradually, he got used to Vivitrol, and he started to feel hopeful about the future. The Vivitrol didn't make him high, and it reduced his powerful cravings for heroin.

In addition to getting a Vivitrol shot at his doctor's office each month, Jake met with his individual counselor every week, and their sessions helped him deal with his depression. He also had to take urine tests at random intervals to check for the presence of heroin and other drugs.

After a few weeks in treatment, he slipped and used heroin again. The Vivitrol in his system blocked the heroin high and protected him from overdosing. He felt guilty about his slip and talked to his counselor about it right away.

Jake went back to his doctor every month for his Vivitrol shot, he continued to see his counselor, and his random urine tests proved that he was no longer using heroin or any other illegal drugs. He has the goal of stopping Vivitrol eventually. Jake is now working on his GED and has a job as a cook in a local restaurant. He's hoping to go to culinary school in the future to become a chef.

For each of the following items, choose the number that corresponds to your belief about the statement:

1	2	3	4	5
Sure this is NOT true		Not sure whether this is true or not		Sure this IS true

3.* Jake treatment did not involve taking any medications—the treatment was totally drug-free.

4.* When Jake slipped and used heroin again, the methadone in his system protected him from overdosing.

*"I prefer not to answer" was an additional option for these items.

[Control Condition Version]

In the U.S. today, drug-free rehabilitation and medication-assisted treatment (MAT) are the two main approaches to treating heroin use disorder.

Drug-free Rehabilitation

The oldest approach to treating heroin use disorder is still the most widely available. Some rehab programs focus on 12-Step groups like Narcotics Anonymous and peer support to help people stop using heroin. Other programs may include professional counseling.

Drug-free rehab programs assume that clients don't need medication to overcome their addiction, and most such programs will not admit clients who are receiving MAT. Any evidence of drug use (for example, having a urine test that's positive for the presence of heroin) typically means clients are discharged for breaking the rules of the program.

Although some people recover from heroin use disorder through drug-free rehab, this treatment is not as effective as MAT and leaves people vulnerable to overdose death if they slip and use heroin again, even if they only use it once.

Medication-Assisted Treatment (MAT)

This approach is considered to be much more effective than drug-free rehab, but it remains controversial because many people believe that medication should not be used to treat addiction. There are three main kinds of MAT in the U.S., and all three protect people from overdose death if they slip and use heroin again while they're on these medications.

Both methadone and Suboxone (the most commonly prescribed form of buprenorphine) have lots of scientific evidence supporting their effectiveness. Both medications reduce cravings and help people's lives stabilize without the need for heroin and without making people "high." Methadone treatment requires clients to go to a methadone clinic every day for at least several months to get their medication. Suboxone can be prescribed by specially trained doctors in a regular office setting, and clients can take it at home. People taking either of these medications see a drug counselor frequently.

Vivitrol (the long-acting form of naltrexone) is an injection that lasts about a month. Like methadone and Suboxone, Vivitrol often reduces clients' heroin cravings. People have to detox from heroin for at least a week before getting their first shot, and the painful withdrawal symptoms are a major barrier to many people with heroin use disorder.

For each of the following items, choose the number that corresponds to your belief about the statement:

1	2	3	4	5
Sure this is NOT true		Not sure whether this is true or not		Sure this IS true

3. Drug-free rehabilitation is more effective than medication-assisted treatment for heroin use disorder.
 4. If clients receiving medication-assisted treatment slip and use heroin again, the medication in their system protects them from overdosing.
- *"I prefer not to answer" was an additional option for these items.

Dependent Variables

Scenario-Linked Attitude Items

For each of the following statements, choose the number that corresponds to your personal attitude or opinion:

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

-
- 1.* Jake is to blame for having a heroin use disorder.
 2. Jake should get the credit for his recovery from heroin use disorder.
 3. Jake's recovery is real, meaningful recovery.
 4. The months when Jake has had no illegal drugs in his system should count as "clean" (or drug-free) time.
 - 5.* Being completely free of all drugs, legal and illegal, is necessary for Jake's recovery.
 6. Jake should be proud of his recovery.

*Indicates that the item was recoded before combining it with the other items to attempt to form a scale.

Cronbach's $\alpha = .48$; therefore, items were not combined, and one-way analyses of variance were conducted on each item separately in its original (unrecoded) form.

Because they did not read about Jake's recovery, the Control Condition participants were only given Items 1 and 5 of this scale.

General Attitudes about Medication-Assisted Treatment (not linked specifically to the scenarios)

This version of the General Attitude items was administered to participants in both the Drug-Free Rehab Condition and the Control Condition.

For each of the following statements, choose the number that corresponds to your personal attitude or opinion:

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

-
- 1.* Medication-assisted treatment is just trading one addiction for another.
 2. If people with a serious heroin use disorder receive medication-assisted treatment, they will commit fewer crimes.
 - 3.* Abstinence (being completely free of all drugs, including medication-assisted treatment) is the only acceptable treatment option for people who have a serious heroin use disorder.
 - 4.* The costs of medication-assisted treatment outweigh the benefits.
 5. Medication-assisted treatment should be widely available to people with heroin use disorder.
 6. Using medication to treat heroin use disorder is the same as using medication to treat Type II diabetes or high blood pressure.
 7. Medication-assisted treatment reduces the risk of overdose death.
 8. I don't know much about medication-assisted treatment.
 9. I personally know people who have suffered from heroin use disorder.
 10. If someone I cared about had a heroin use disorder, I would want that person to get medication-assisted treatment.

*Indicates that the item was recoded before combining it with the other items to attempt to form a scale.

Cronbach's $\alpha = .86$; therefore, items were combined into a single scale, and a one-way analysis of variance was conducted on the scale mean.

General Attitudes about Methadone Treatment (not linked specifically to the scenarios)
[Note: Separate versions of these items for the other conditions are presented below]

For each of the following statements, choose the number that corresponds to your personal attitude or opinion:

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

-
- 1.* Methadone-assisted treatment is just trading one addiction for another.
 2. If people with a serious heroin use disorder receive methadone-assisted treatment, they will commit fewer crimes.
 - 3.* Abstinence (being completely free of all drugs, including methadone) is the only acceptable treatment option for people who have a serious heroin use disorder.
 - 4.* The costs of methadone-assisted treatment outweigh the benefits.
 5. Methadone-assisted treatment should be widely available to people with heroin use disorder.
 6. Using methadone to treat heroin use disorder is the same as using medication to treat Type II diabetes or high blood pressure.
 7. Methadone treatment reduces the risk of overdose death.
 8. I don't know much about methadone treatment.
 9. I personally know people who have suffered from heroin use disorder.
 10. If someone I cared about had a heroin use disorder, I would want that person to get methadone-assisted treatment.

*Indicates that the item was recoded before combining it with the other items to form a scale.

General Attitudes about Buprenorphine (Suboxone) Treatment (not linked specifically to the scenarios)

For each of the following statements, choose the number that corresponds to your personal attitude or opinion:

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

-
- 1.* Suboxone-assisted treatment is just trading one addiction for another.
 2. If people with a serious heroin use disorder receive Suboxone-assisted treatment, they will commit fewer crimes.
 - 3.* Abstinence (being completely free of all drugs, including Suboxone) is the only acceptable treatment option for people who have a serious heroin use disorder.
 - 4.* The costs of Suboxone-assisted treatment outweigh the benefits.
 5. Suboxone-assisted treatment should be widely available to people with heroin use disorder.
 6. Using Suboxone to treat heroin use disorder is the same as using medication to treat Type II diabetes or high blood pressure.
 7. Suboxone treatment reduces the risk of overdose death.
 8. I don't know much about Suboxone treatment.
 9. I personally know people who have suffered from heroin use disorder.
 10. If someone I cared about had a heroin use disorder, I would want that person to get Suboxone-assisted treatment.

*Indicates that the item was recoded before combining it with the other items to form a scale.

General Attitudes about Naltrexone (Vivitrol) Treatment (not linked specifically to the scenarios)

For each of the following statements, choose the number that corresponds to your personal attitude or opinion:

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

-
- 1.* Vivitrol-assisted treatment is just trading one addiction for another.
 2. If people with a serious heroin use disorder receive Vivitrol-assisted treatment, they will commit fewer crimes.
 - 3.* Abstinence (being completely free of all drugs, including Vivitrol) is the only acceptable treatment option for people who have a serious heroin use disorder.
 - 4.* The costs of Vivitrol-assisted treatment outweigh the benefits.
 5. Vivitrol-assisted treatment should be widely available to people with heroin use disorder.
 6. Using Vivitrol to treat heroin use disorder is the same as using medication to treat Type II diabetes or high blood pressure.
 7. Vivitrol treatment reduces the risk of overdose death.
 8. I don't know much about Vivitrol treatment.
 9. I personally know people who have suffered from heroin use disorder.
 10. If someone I cared about had a heroin use disorder, I would want that person to get Vivitrol-assisted treatment.

*Indicates that the item was recoded before combining it with the other items to form a scale.

Manipulation Check

For each of the following items, choose the number that corresponds to your belief about the statement. Please note that the RESPONSE OPTIONS (below) HAVE CHANGED:

1	2	3	4	5
Sure this is NOT true		Not sure whether this is true or not		Sure this IS true

-
- 1.* Jake's mom was disabled in a car accident when Jake was a boy.
 - 2.* Jake's dad struggled with alcohol and drug problems when Jake was young.
 - 3.* Jake was a good student in school.
 - 4.* Jake committed crimes to get money to buy drugs.
 - 5.* Jake started using heroin because it was cheaper and more available than pain pills.
 6. Methadone/Suboxone/Vivitrol/Medication-assisted treatment made Jake's cravings for heroin worse.
 7. Jake experienced painful withdrawal symptoms for several days when he started treatment.
 - 8.* Heroin and prescription pain pills made Jake feel like all his troubles disappeared, at least temporarily.
 9. While in treatment, Jake slipped and used heroin.
 10. After several months in treatment, random urine tests showed that Jake was no longer using illegal drugs.

*All participants responded to all manipulation check items, but because Control Condition participants did not read about Jake's recovery, only the items marked with an asterisk were used in determining whether participants had adequately processed the scenario variation to which they were randomly assigned.

Attributions of Responsibility and Blame for Heroin Use (ARBHU)

[Note that this set of items was moved from its position in Study 1, where it originally appeared between the Scenario-Linked Attitude Items and the General Attitudes toward Methadone Items.]

For each of the following statements, choose the number that corresponds to your personal attitude or opinion:

Please note that the RESPONSE OPTIONS (below) HAVE CHANGED:

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

-
1. People with a heroin use disorder are responsible for their condition.
 2. Heroin use disorder is caused by biological changes in the brain.
 3. Having a heroin use disorder is under the individual's control.
 4. Heroin use disorder is a biological disorder.
 5. If people develop a heroin use disorder, it's their own fault.
 6. Heroin use disorder is a moral weakness.
 7. Heroin use disorder is a disease.
 8. People who have a heroin use disorder can just quit using the drug if they really want to.
 9. People who have a heroin use disorder are not to blame for their disorder.
 10. Heroin use disorder is a brain disease.
 11. To recover from heroin use disorder, people just need to pull themselves together.
 12. People with a heroin use disorder have only themselves to blame.
 13. Heroin use disorder is caused in part by one's genes.
 14. Having good job prospects increases the risk of heroin use disorder.
 15. Children who are mistreated are more likely to develop a heroin use disorder as adults.
 16. If they're untreated, mental disorders like depression increase the risk of heroin use disorder.
 - *17. I am reading and thinking carefully about each of the statements in this survey.
 18. Heroin use disorder might be caused by a character problem or flaw.
 19. Heroin use disorder might be caused by a chemical imbalance in the brain.
 20. Heroin use disorder might be caused by a genetic or inherited problem.
 21. Heroin use disorder might be caused by the way a person was raised.
 22. Heroin use disorder might be caused by exposure to traumatic events in childhood.
 23. Heroin use disorder might be caused by stressful life circumstances in a person's life.

*This attention-check item was moved from its position in Study 1, where it was imbedded among the Manipulation Check items.

Demographic Questions

1. Age _____
2. Gender _____ Male _____ Female _____ Other/Non-binary _____ I prefer not to answer
3. Highest level of education attained
_____ Some high school
_____ GED or high school degree
_____ Some college or technical/professional training
_____ Undergraduate degree
_____ Some graduate or professional school
_____ Graduate or professional degree
_____ Other
4. Race
_____ African American, Non-Hispanic
_____ Hispanic/Latino
_____ White, Non-Hispanic
_____ Asian/Pacific Islander
_____ American Indian/Native Alaskan
_____ Other
5. Which of the following best describes your political identity?
_____ Strongly liberal
_____ Moderately liberal
_____ Slightly liberal
_____ Neutral (moderate)
_____ Slightly conservative
_____ Moderately conservative
_____ Strongly conservative
6. In what state do you currently reside? (drop-down menu)

**Debriefing for MTurk Participants:
"Opinions about Treating Heroin Use Disorder" Research Study**

Thank you for participating in the "Opinions about Treating Heroin Use Disorder" research study, designed by Dr. Perilou Goddard and Megan Carroll. Anecdotal evidence suggests widespread stigma toward medication-assisted treatment, but there are no scientifically sound studies demonstrating it. This research study is designed to assess people's opinions about medication-assisted treatment (in general or in one of three forms: methadone, Suboxone, or Vivitrol) and drug-free rehab and to determine if the stigma toward medication-assisted treatment can be empirically verified. You read about a hypothetical person ("Jake") who developed a heroin use disorder. Then you were randomly assigned to read about medication-assisted treatment in general (without reference to Jake's recovery) or to how Jake found recovery through drug-free rehab or one of the three forms of medication-assisted treatment. We hypothesized that Jake will get more credit for his recovery if it occurred via drug-free treatment and that medication-assisted recovery won't be considered "real" recovery, despite the strong scientific evidence for its effectiveness.

All questionnaire responses are completely CONFIDENTIAL. Your responses will never be connected to any information that can reveal your identity. Your MTurk worker ID will only be used to pay you for your work--it will not be included in any data files associated with this study. The data file generated in this study will NEVER contain any individually identifying information.

You will earn \$1 for your participation.

If participating in this study raised any concerns for you about drug use or other problems, please consider contacting your primary care physician or local mental health agency. To locate treatment resources near you, contact the Substance Abuse and Mental Health Services Administration (SAMHSA)'s free and confidential National Helpline at 1-800-662-HELP (4357) (TDD: 1-800-487-4889) or use their online treatment locator at <https://findtreatment.samhsa.gov/>

If you'd like to find out the study's results when they become available, or if you have any questions or concerns about your participation, please feel free to contact Dr. Perilou Goddard: goddard@nku.edu.

Thank you very much for your help with this study. We sincerely appreciate your time and effort.