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An Experimental Investigation Examining the Impact of Medical Association Statements about Drug Addiction on Perceptions of Criminal Culpability and Punishment

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Abstract: This study examined whether public opinion on drug addiction, perceived culpability/responsibility, and punishment were impacted by statements from medical associations that drug addiction is a disease and not a choice. We utilized an experimental information provision survey distributed via Qualtrics to heads of household in South Carolina with an associated email address. The randomized treatment variable had two conditions. The first condition presented participants with a statement from several noteworthy medical associations/institutions noting that drug addiction is a disease. The second condition provided no statement (control condition). Results from our sample of over 5000 indicated that a large majority of respondents felt that individuals who have been diagnosed with a drug addiction should be fully responsible for any crimes that they commit. The presentation of official statements that addiction was a disease did not produce meaningful differences from the control group. Additionally, a large majority of respondents did not agree that addiction should relieve a defendant from punishment for drug crimes, theft crimes, or violent crimes. Here again, the presentation of official statements that addiction was a disease did not produce meaningful differences from the control groups. Finally, our results indicated that a majority of respondents viewed addiction as both a choice and disease, and the presentation of official statements that addiction was a disease did not meaningfully alter any responses.

Keywords: experiment; survey; addiction; addiction defense; culpability; public opinion

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1. Introduction

There is an ongoing debate among medical researchers about whether drug addiction is a disease or a choice (Heilig et al. 2021; Room 2021). Given the disagreements among medical researchers, it is no surprise that controversies surrounding this issue have made their way into the United States court system. In 1925, the U.S. Supreme Court recognized addiction as a disease (Sullivan 1973). Decades later in (Robinson v. California 1962), the Supreme Court held that a California statute stating that individuals addicted to narcotics could face criminal penalties, including imprisonment, was unconstitutional as it was cruel and unusual punishment (Robinson v. California 1962). Many other defendants accused of various crimes (public intoxication, probation violation for drug use, drug use/possession, homicide) have attempted to argue that punishment for the underlying crime(s) was improper because their actions were the result of a disease, rather than a voluntary choice (Sullivan 1973; Sarro 1978). While defendants have had varying levels of success attempting to utilize a "drug dependence defense", (Commonwealth v. Eldred 2018; Commonwealth v. Dunphe 2020; see also Morse 2022), defendants are permitted to use their drug dependence as mitigation (Lockett v. Ohio 1978).[1]

Interestingly, previous research has demonstrated that perceived culpability levels can be mitigated when scientific/medical explanations (e.g., chemical imbalances) are provided as reasoning for an individual's conduct (Monterosso et al. 2005; Berryessa 2018). Relevant to the addiction area, previous research also explored whether expert testimony about addiction being a disease with a biological explanation rather than a choice would impact sentence lengths for a drug crime in a mock jury scenario (Ricardo and Henderson 2021).[2] That study found no statistically significant differences in sentence lengths between a treatment group of mock jurors who received the expert testimony and a control group of jurors who received no expert testimony. In a European vignette study, the authors found that magistrates imposed significantly lower sentences for those who developed brain damage as a result of a disease (non-addiction related), but not for those who had heroin addictions (largely because addiction was viewed as a choice) (Sinclair-House et al. 2020).[3] Other than these studies, there is limited research assessing the various influences that may affect the public's (who may serve as jurors) perception of criminal culpability in cases when the offender is addicted to drugs.

The present study sought to extend this line of research by utilizing an experimental survey design to test whether public opinion on drug addiction, perceived culpability/responsibility, and punishment were impacted by statements from medical associations that drug addiction is a disease and not a choice. This study provided a timely update as Americans' perceptions and justice system approaches towards drug users are shifting (Stemen 2017). Additionally, our study has implications for research and implications for attorneys broadly. The specific research questions were as follows:

RQ1: Do perceived culpability levels for criminal defendants differ after participants are provided official medical opinions stating that addiction is a disease?
RQ2: Does the presentation of official medical opinions stating that addiction is a disease alter perceptions about the appropriateness of punishment for drug crimes?
RQ3: Does the presentation of official medical opinions stating that addiction is a disease alter perceptions about the appropriateness of punishment for theft crimes?
RQ4: Does the presentation of official medical opinions stating that addiction is a disease alter perceptions about the appropriateness of punishment for violent crimes?
RQ5: Do opinions identifying addiction as a disease or a choice differ after participants are provided official medical opinions stating that addiction is a disease?

2. Materials and Methods

A between-subjects electronic survey experiment was used to answer the above research questions (Shadish et al. 2002). The main benefit of between-subjects experimental designs is they help eliminate carryover effects (Greenwald 1976). In this study, approximately half of the participants received a treatment condition and approximately half of the respondents received a control condition (participants only received one of the conditions). Treatment randomization in the current study was accomplished using the Qualtrics randomization feature (Boehme et al. 2023).

2.1. Study Context and Sample

The state of South Carolina was chosen as the study location largely because the research team has previous experience surveying residents from the state (including surveys with experimental manipulation). South Carolina has a population of 5,282,634 (United States Census Bureau 2022). Approximately 88% of South Carolina's population is over 18, and 51.3% are female. About 69% of the population is White, 26% is African American, and 7% is Hispanic or Latine. About 30% of the population (25 years old and older) has a bachelor's degree or higher. The median household income was about $58,000.

A list of potential respondents was secured from Mailer's Haven, a company that obtains and ensures the quality of public contact lists. The list contained heads of household in South Carolina with an associated email address (904,583 total email addresses). The survey was piloted multiple times by various faculty and graduate students before the

final distribution. Following the pilot study and Institutional Review Board Approval, the survey was distributed through Qualtrics (Molnar 2019). Participants were incentivized to participate with the possibility of winning a e-gift card.[4] The median time to complete the survey was 573 s and 5201 individuals responded to the survey (meaning a response rate of less than 1%). A sample description can be found in the technical appendix. Sample descriptive statistics include age, gender, race/ethnicity, political affiliation, employment status, marital status, whether the respondent or someone the respondent knows has witnessed an opiate overdose, and whether the respondent has used opiates in the last twelve months. Following the recommendations of Mutz et al. (2019), balance tables are not presented as we detected no issues with our randomization mechanism.

2.2. Randomized Treatment

The treatment variable contained two conditions, which were dummy coded (treatment = 1 and control = 0). The treatment condition contained the following statement:

> The American Medical Association, Mayo Clinic, Cleveland Clinic, American Society of Addiction Medicine, and United States Surgeon General have stated that substance abuse disorder/addiction IS A DISEASE, rather than just a choice by the person using the substance.

While some individuals may not be aware of all of the above entities, it is reasonable to assume that individuals would recognize their statuses as medical associations/organizations. If respondents received the control condition, they were presented the statements/questions without any statement from medical associations. Respondents who were assigned the treatment condition first saw the medical associations' statement by itself on the screen, and again alongside the statements/questions that consisted of our dependent variables.

2.3. Dependent Variables

There were four dependent variables that utilized statements with accompanying Likert scales. Each dependent variable presented participants with a question/statement about addiction.[5] The statements were as follows:

> Dependent Variable 1: Individuals who have been diagnosed with a drug addiction should be fully responsible for any crimes that they commit.[6]
>
> Dependent Variable 2: Individuals who have been diagnosed with a drug addiction should not be punished for theft crimes that they committed because of their drug addiction.
>
> Dependent Variable 3: Individuals who have been diagnosed with a drug addiction should not be punished for drug crimes that they committed because of their addiction.[7]
>
> Dependent Variable 4: Individuals who have been diagnosed with a drug addiction should not be punished for violent crimes that they committed because of their drug addiction.

For all of the above statements, participants were given the opportunity to respond with Strongly Disagree, Somewhat Disagree, Neither Disagree Nor Agree, Somewhat Agree, or Strongly Agree. For parsimony, ease of interpretation, and because there were no changes in any conclusions, the dependent variables, originally 5-point Likert scales (strongly disagree to strongly agree), were recoded as 1 = strongly agree or agree, and 0 = neither disagree nor agree, disagree, and strongly disagree (Jeong and Lee 2016).[8] When interpreting these results, it is important to note that the neither category should not be conflated with the disagree responses. The results should be interpreted as 1 = an agree response and 0 = any other response. An additional dependent variable was a multiple-choice question that asked participants to select the statement that best aligned with their view of drug addiction. The choices were as follows (respondents could only choose one):

I am unsure if drug use is the result of choice or disease.
Using drugs is a choice, and drug addiction should NOT be classified as a disease.
Using drugs is not a choice, and drug addiction should be classified as a disease.
Using drugs is the result of both choice and disease.

2.4. Analytic Strategy

All analyses were conducted with the software Stata (version 17) (StataCorp 2021). The first stage of data analysis presents descriptive statistics, which are available in the technical appendix. The second stage utilized binary logistic regression and multinomial logistic regression analyses to examine the impact of the treatment conditions on the five dependent variables. Results were presented using Stata's margins commands. Reported first were adjusted predictions (i.e., predicted probabilities). The main advantages of using adjusted predictions include ease of interpretation and practical significance (Williams 2012). Statistically significant differences between these adjusted predictions were then noted using Stata's average marginal effects ((Williams 2012) notes that most analysts prefer average marginal effects largely because all data are used in its computation rather than just means). While statistical significance ($p < 0.05$) was noted throughout the results section, marginally ($p < 0.10$) and substantively significant findings were also discussed as recommended by Wasserstein and colleagues (Wasserstein et al. 2019). Finally, we checked the robustness of our findings by including several control variables into our regression models. Because the inclusion of control variables did not alter any of our results (as would be expected with successful randomization and an adequate sample), they are not presented below and are available upon request. Supplementary and sensitivity analyses can be found in the Supplementary Materials.

3. Results

A. Culpability Questions

Table 1 below shows the predicted probabilities of strongly agree or agree responses to each question that consist of our dependent variables.

Table 1. Probability of agree response for culpability questions.

Question	Control %	Treatment %
Fully responsible for all crimes	81.3%	81.6%
Not responsible for theft crimes	7.2%	7.5%
Not responsible for drug crimes	9.3%	9.0%
Not responsible for violent crimes	6.1%	6.1%

I. Individuals who have been diagnosed with a drug addiction should be fully responsible for any crimes that they commit.

The predicted probabilities of a strongly agree/agree response were as follows (n = 5047): Control = 81.3%; Treatment = 81.6%. Average marginal effects showed that the difference between the treatment and control groups was not statistically significant ($p = 0.815$; CI = −0.019–0.024).

II. Individuals who have been diagnosed with a drug addiction should not be punished for theft crimes that they committed because of their addiction.

The predicted probabilities of a strongly agree/agree response were as follows (n = 5041): Control = 7.2%; Treatment = 7.5%. Average marginal effects showed that the difference between the treatment and control groups was not statistically significant ($p = 0.678$; CI = −0.011–0.017).

III. Individuals who have been diagnosed with a drug addiction should not be punished for drug crimes that they committed because of their addiction.

The predicted probabilities of a strongly agree/agree response were as follows (n = 5039): Control = 9.3%; Treatment = 9.0%. Average marginal effects showed that the difference between the treatment and control groups was not statistically significant (p = 0.707; CI = −0.019–0.013).

IV. Individuals who have been diagnosed with a drug addiction should not be punished for violent crimes that they committed because of their addiction.

The predicted probabilities of a strongly agree/agree response were as follows (n = 5036): Control = 6.1%; Treatment = 6.1%. Average marginal effects showed that the difference between the treatment and control groups was not statistically significant (p = 0.964; CI = −0.014–0.013).

B. Question Asking Whether Addiction is a Disease or a Choice.

Tables 2 and 3 display the results of the question asking whether addiction is a disease or a choice. As shown, most respondents noted that using drugs is both a choice and a disease. The second most common response was that using drugs is a choice. Additionally, Tables 2 and 3 also show that there was no meaningful difference in responses between those that received the treatment and control conditions.

Table 2. Probability of agree response by response category and treatment assignment.

Response Category/Assignment	Agree Probability
Using drugs is a choice/Control	0.247
Using drugs is a choice/Treatment	0.243
Addiction is a disease/Control	0.046
Addiction is a disease/Treatment	0.056
Both choice and disease/Control	0.672
Both choice and disease/Treatment	0.670
Unsure/Control	0.036
Unsure/Treatment	0.031

Table 3. Differences between treatment and control for response categories.

Response Category	Treatment-Control	p	CI Lower	CI Upper
Using drugs is a choice	−0.004	0.743	−0.028	0.020
Addiction is a disease	0.010	0.117	−0.002	0.022
Both choice and disease	−0.001	0.937	−0.028	0.025
Unsure	−0.005	0.352	−0.015	0.005

4. Discussion

The present study primarily sought to test whether statements from medical associations that drug addiction is a disease and not a choice could alter perceptions of culpability/responsibility and about the appropriateness of punishment for those addicted to drugs. Results showed no substantively or statistically significant differences between those who received the medical association treatment condition and those who received the control condition (no statement). In other words, perceptions about the appropriateness for punishment for drug crimes, theft crimes, and violent crimes were not altered by the reception of the statements from medical associations that drug addiction was a disease. Further, receipt of the treatment did not alter any responses (when compared to those who received the control) to the statement noting that individuals who have been diagnosed with a drug addiction should be fully responsible for any crimes that they commit.

The present study also sought to test whether the statements from medical associations could impact perceptions of whether addiction is a choice, disease, or both. Results showed that the receipt of the treatment did not alter perceptions about whether addiction is a disease, a choice, or both (when compared to those who received the control condition).

Nonetheless, it was an interesting overall result that a majority of respondents viewed addiction as both a choice and disease, showing the nuances of public opinion in this area.

While not the direct focus of the current study, it is also important to note the differences between the crime-type categories. For example, the level of agreement was lowest for the violent crime statement and highest for the drug crime statement. This finding could indicate that individuals may be more willing to accept an addiction defense in particular types of criminal cases. However, further research should formally explore whether there are statistically or substantively significant differences between certain crime types.

Our study offers implications for court actors and related policymakers. For example, defense attorneys should carefully consider whether it would be beneficial to present an addiction-based defense. However, our results should not be taken to mean that addiction-based defenses are entirely ineffective. It is possible that presenting an addiction-based defense may be appropriate in some circumstances with particular framing. Additionally, given that the majority of respondents saw addiction as both a choice and a disease, policymakers may want to consider the appropriateness of sanctions that fail to address the potential disease aspect of addiction for defendants with diagnosed addiction issues (or consider modifying sanctions so that the underlying addiction can be addressed).

This study may also have implications for the potential impact of medical statements from respected medical associations on public opinion. We learned from the COVID-19 pandemic that Americans became disinterested in the recommendations by notable medical associations and officials (Thomson and Ip 2020). Given that our study was conducted after the COVID-19 pandemic, it is important to note that our findings may have been impacted by post-pandemic attitudes towards medical associations. Nonetheless, our results are consistent with previous research in this area.

Although we use an experimental design, there are several limitations worth noting. First, we utilized a sample of South Carolina heads of households, meaning our results may not reflect the entire population of South Carolina. Second, our results may not generalize to other states. Third, ordering of all sections was not fully randomized, and the order of particular sections may have impacted results.[9] Fourth, a between-subjects design is unable to examine within-respondent differences and has a greater potential for error variance, where unobserved individual respondent differences could affect the dependent variable. Relatedly, it should be noted that there is a possibility that individual participants could have interpreted our questions/statements differently. However, we have no evidence of this issue as no concerns were raised in pilot testing or during survey distribution (participants were given the opportunity to note issues with the survey). Fifth, the current study sought to identify public perceptions about the general statements on addiction, culpability, and punishment. Results may differ if one were to include more specific and detailed medical evidence/expert testimony about addiction or more specific and detailed case facts. Future researchers should seek to address these limitations to better illuminate the impact of official scientific statements about addiction on culpability levels.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/socsci13070373/s1.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board (or Ethics Committee) of the University of South Carolina (Protocol #: Pro00131209 on 13 October 2023).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

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Conflicts of Interest: The authors declare no conflicts of interest.

Notes

1 Also note that some jurisdictions explicitly address the value of drug addiction in their sentencing guidelines. For example, a policy statement from the United States Sentencing Commission states that "[d]rug or alcohol dependence or abuse ordinarily is not a reason for a downward departure. Substance abuse is highly correlated to an increased propensity to commit crime. §5H1.4. Physical condition, including drug or alcohol dependence or abuse, gambling addiction (policy statement). See (Scott 2021) for a comprehensive overview of this policy statement and arguments against the current version.

2 The study noted that "[t]he Brain Disease Model of Addiction (BDMA) posits that drug addiction is a chronic, relapsing disease of the brain and is the model endorsed by the National Institute of Drug Abuse." See (Ricardo and Henderson 2021).

3 For similar studies, see (Berryessa 2023; Berryessa and Krenzer 2020; Ochterbeck et al. 2024).

4 Two $50 gift cards, five $20 gift cards, and ten $10 gift cards were offered as prizes.

5 Rather than differentiate between criminal, civil, or alternative types of punishment, we chose simple statements related to punishment and culpability to avoid participant confusion.

6 While this specific statement was designed to allow for opinions about mitigation, we opted for the simpler non-technical language (i.e., "fully responsible") following pilot study feedback.

7 Note that this statement differs from the other crime-specific statements because it uses "addiction" rather than "drug addiction". However, this difference would not impact any results as individuals in the treatment and control conditions would have received the same statement.

8 Multinomial logistic regression results are available in the technical appendix. The results of the multinomial logistic regression results did not alter any conclusions drawn from the binary logistic regressions (i.e., there were no statistically or substantively significant differences between the treatment and control conditions for all questions).

9 Earlier sections of the survey required a larger sample to reach adequate statistical power. Therefore, we did not randomize survey sections to ensure the sections requiring a larger sample were viewed first (thus limiting dropouts).

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