BREAKING THE STIGMA: UNCOVERING THE FACTORS BEHIND MISTRUST
TOWARDS INDIVIDUALS WITH ADDICTION HISTORIES.

by

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ABSTRACT

IVÁN FLORES MARTÍNEZ. Breaking the Stigma: Uncovering the Factors Behind Mistrust Towards Individuals with Addiction Histories. (Under the direction of DR. JAMES WALSH)

In contemporary society, individuals with substance abuse histories face a multitude of challenges that extend far beyond the physical and psychological effects of addiction. As they embark on the path of recovery and strive for reintegration into society, they are confronted with an additional formidable barrier: the pervasive stigma and discrimination that persistently accompany their past struggles. This dissertation seeks to illuminate the profound impact of stigma and discrimination on individuals with substance abuse histories, exploring the underlying factors that perpetuate these harmful attitudes, and proposing potential strategies to alleviate their burden. Comprised of three interconnected papers, this research analyzes trust dynamics, stigma, and social support towards this population, offering valuable insights for combating stigma and fostering a more inclusive and compassionate society.

The first paper focuses on the power of counter stereotypical information to counteract negative stereotypes and enhance trust in everyday interactions involving individuals with substance abuse histories. By examining the ways in which positive information mitigate stigmatizing attitudes, this paper uncovers strategies to promote understanding and empathy in social encounters, paving the way for more meaningful connections and reduced discrimination. Moving forward, the second paper explores participants' perceptions of trust and trustworthiness when engaging with partners with varying substance abuse histories in a trust game. By investigating how participants' knowledge of their partners' backgrounds influences expectations of reciprocity and trustworthiness, this paper unravels the complex dynamics that shape trust evaluations in interpersonal relations. The findings highlight how challenging preconceptions can

transform perceptions, dismantle biases, and foster a more inclusive and empathetic society. Lastly, the third paper investigates the psychological and relational factors that influence cooperation and support towards individuals with substance abuse histories within familial and friendship networks. By identifying the barriers that hinder cooperation and providing recommendations for creating supportive environments, this paper aims to strengthen social support networks and facilitate a more compassionate and inclusive community for individuals facing substance abuse challenges.

Collectively, these three papers contribute to the broader goal of combating stigma, building trust, and fostering cooperation towards individuals with substance abuse histories. The findings underscore the pivotal role of counter stereotypical information, perceptions of warmth and trustworthiness, and the significance of individual attitudes and social support networks in reducing stigma and cultivating an environment that promotes recovery. By revealing the complexities of stigma and discrimination, this dissertation aspires to inform policies and interventions that empower individuals with substance abuse histories to thrive and reintegrate into society with dignity and respect.

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DEDICATION

I want to dedicate this dissertation to my mom. Throughout my life, you have been my unwavering source of support, encouragement, and inspiration. Your love and belief in me have been the driving force behind every accomplishment, and this academic achievement is no exception. Your love has been my anchor, and I am eternally grateful for your presence in my life.

Contents

List of Tables

List of Figures

Chapter 1: Introduction

This dissertation investigates the factors influencing discrimination and mistrust towards individuals with a history of substance abuse, aiming to reduce stigma and promote cooperation and empathy towards this marginalized group. While prior research has extensively explored the stigma and discrimination faced by individuals with substance abuse histories in various domains, such as labor markets, judicial systems, and healthcare settings (Eaton et al., 2015; Kilian et al., 2021; Practitioners & Experience, n.d.; Radcliffe & Stevens, 2008; Semple et al., 2005; Troup et al., 2022), there is a considerable gap in understanding how they are perceived in everyday interpersonal interactions. This study aims to bridge this gap by examining perceptions of trust and trustworthiness towards individuals with substance abuse histories, as these aspects are fundamental to personal relationships and social interactions.

The dissertation consists of three interconnected papers that make significant contributions to our comprehension of trust, stigma, and social support among individuals with substance abuse histories. The first paper centers on exploring the connection between trust and a background of addiction. To measure potential bias against drug addicts, the study uses hypothetical scenarios involving personal and property risk. The outcomes reveal diminished trust in individuals with a substance abuse history in both scenarios. However, the research goes beyond merely presenting this outcome. Instead, it delves deeper into exploring potential strategies to address this initial distrust.

One strategy examined in the first paper involves providing counter-stereotypical information about individuals with substance abuse histories. By highlighting instances of public service leadership performed by these individuals, the study aims to ascertain whether this positive information can counteract negative stereotypes and foster greater trust in these individuals. The

results indicate that portraying individuals with substance abuse histories in a more favorable light can reduce mistrust and encourage a more inclusive and supportive attitude toward this group. Moreover, in a second experiment, participants were presented with a scenario featuring a person seeking their assistance. The results indicate that individuals with substance abuse histories received lower levels of support within family networks. Specifically, participants displayed a reduced inclination to provide informational support to individuals with such backgrounds.

The second paper of the dissertation investigates the impact of substance abuse histories on participants' trust judgements, using a modified trust game experiment. Specifically, the study focuses on participants' interactions with hypothetical partners who have different substance abuse histories, while also assessing their perceptions of warmth and competence. The findings reveal that participants' expectations of reciprocity are influenced by their knowledge of their partner's substance abuse history, with lower expectations when addiction or rehabilitation histories are known. The results also highlight the positive impact of interventions that emphasize partners' academic achievements or community service leadership on trust perceptions and perceived trustworthiness. The perception of warmth plays a pivotal role in mediating these relationships.

By prioritizing warmth and showcasing positive attributes such as academic competence and community service leadership, these interventions wield the potential to reshape attitudes, counteract stigma, and cultivate support for individuals in recovery from substance abuse. However, it is imperative to approach the provision of information cautiously, particularly when it yields substantial changes in participants' expectations. Such shifts might inadvertently be misinterpreted as arrogance, conceit, or competitiveness, consequently diluting the constructive effects of the interventions. To ensure the efficacy of trust-building endeavors, policymakers must address any skepticism that may arise in response to the disseminated information. Being

transparent in the dissemination of information becomes crucial in fostering genuine trust and avoiding unintended negative consequences. By embracing this prudent and transparent approach, interventions can actively contribute to the formation of a more compassionate and all-inclusive society for individuals grappling with substance abuse challenges.

The third paper of the dissertation explores the determinants that shape cooperation and support for individuals with backgrounds of substance abuse. By integrating theories from social psychology and sociology, this paper examines how personal perceptions of drug risks, attitudes toward addiction and recovery, and relational contexts influence social support within familial or friendship networks. The study identifies influential factors in fostering cooperation toward individuals dealing with addiction challenges or in recovery. Specifically, attitudes towards addiction and recovery, prior interactions with drug addicts, disclosure of affiliations with addicts, and religiosity emerge as key determinants of social support. These findings underscore the far-reaching effects of substance abuse history on social support and highlight the significance of accounting for contextual factors and individual beliefs in understanding these associations.

Collectively, these papers significantly advance our understanding of the intricate dynamics involving trust, stigma, and social support for individuals with substance abuse histories. The insights gained from these studies offer valuable strategies to combat stigma, build trust, and foster cooperation towards this marginalized population. By emphasizing the significance of benevolent actions, dispelling misconceptions, and cultivating supportive environments, we can collectively work towards creating a more inclusive and compassionate society for individuals struggling with addiction or going through rehabilitation. These findings hold the potential to positively impact the lives of those affected and their support providers and contribute to a more empathetic and understanding community.

Chapter 2: "The effect of drug addiction on people´s willingness to trust and offer social support: Results from two vignette experiments".

Abstract

Objectives: This experiment evaluates whether individuals exhibit decreased trust towards individuals with a known history of drug addiction. Additionally, the study seeks to explore whether portraying these individuals in a more positive light can mitigate distrust towards this population. Finally, the research intends to assess whether individuals with a history of substance abuse receive reduced social support from their friends and family.

Methods: Two hypothetical scenarios were created to assess trust in property and personal risk situations. Participants were randomly assigned to one of the two vignettes and responded to a set of five survey items measuring various dimensions of trust. Subsequently, participants were provided with additional information portraying individuals with a history of substance abuse as current community leaders. Participants then repeated the trust-related survey items. The experimental conditions were presented to a sample of 500 MTurk respondents via a survey. Cronbach's alpha was employed to assess the reliability of the trust index, and OLS regression was used to estimate the impact of the experimental manipulation on trust towards individuals with a history of substance abuse. In a second experiment, participants were presented with a vignette featuring a person seeking the participant's assistance. The experimental conditions were presented in a survey delivered to a sample of 240 participants using the platform Connect by Cloud Research. Cronbach's alpha was used to measure the reliability of the social support indexes, and OLS regression was utilized to estimate the impact of the experimental manipulations on different dimensions of social support.

Results: Participants showed a diminished inclination to trust individuals with a history of substance abuse. However, the introduction of supplementary information portraying these individuals in a more positive light eliminated the differences between groups. Receiving the newsletter was associated with increased levels of trust for all groups, with a stronger effect observed in the treatment group (addict that underwent rehabilitation). The effect of the newsletter on participant trust was moderated by conspiratorial predispositions. Individuals with high conspiratorial predispositions exhibited reduced levels of trust after receiving the newsletter, likely due to their general distrust towards others and the information presented to them. Regarding the study on social support, it was observed that individuals with a history of substance abuse received a lower level of support if they belonged to family networks. Specifically, participants demonstrated a decreased likelihood of offering informational support to individuals with a history of substance abuse.

Conclusion: Participants responded positively to interventions that portrayed individuals with a history of substance abuse in a more positive light. However, individuals with high conspiratorial predispositions exhibited skepticism towards the information presented to them. These findings suggest that this group possesses deep-seated biases and may require additional interventions to reduce their distrust towards drug addicts, if they respond to such interventions at all. Lastly, participants were less inclined to offer informational support to individuals with a history of substance abuse, particularly when they were family members. Implementing mentoring programs and facilitating access to informational resources could assist these individuals in situations where support and guidance from their family is lacking.

Introduction

Individuals with a history of substance abuse struggle to develop trusting relationships because they are perceived by others as dangerous, unpredictable, and hard to talk with (Crisp et al., 2005; Hürriyetoğlu et al., 2020; Livingston et al., 2012; Rao et al., 2009). Given that trust is a precondition to access social capital, individuals with a history of substance abuse will be unlikely to find someone willing to, e.g., recommend them for a job, loan them money, or help them in a time of need. In addition, the feeling of rejection due to the negative labeling associated with former drug addiction reduces the frequency with which drug users interact with non-drug users (Buchanan and Young, 2000; Jackson, Parker, Dykeman, Gahagan, & Karabanow, 2010). This puts them at greater risk of relapsing and reduces their chances of successful rehabilitation.

Mechanisms that increase trust toward individuals with a history of substance abuse may provide them more opportunities to get more social support, greater access to social capital, and better life outcomes. Unfortunately, little research has been done about why individuals extend trust to persons with a history of substance abuse. Additionally, few studies have empirically tested if these individuals are offered less social support by their friend and family networks (Semple et al., 2005). This study aims to fill the gap by identifying the potential sources of variation (individual and contextual) in peoples' willingness to trust and help an individual with a history of substance abuse.

An experiment was designed to investigate whether individuals are less likely to trust someone with a history of drug addiction. Two hypothetical scenarios were employed to assess trust in property and personal risk situations (Simonds et al., 2021). In the former scenario, respondents are told that a classmate has offered to watch the respondent's home while they were away on vacation. In the latter scenario, a classmate has offered to come over to the respondent's

home to work on a class project when the respondent's roommates are away. Participants were randomly assigned to one of the two scenarios (property or personal risk) and to a treatment or control condition (classmate's history of drug abuse and rehabilitation versus no history of drug abuse). Participants then responded to survey items that measure different dimensions of trust. Afterwards, the participants were provided with new information through a newsletter sent by their college. The newsletter stated that the student had received an award from a public service organization. The participants were then asked to re-answer the trust survey items plus two new questions that measure the extent to which the participant believes that their classmate had changed their behavior and overcome their addiction.

Participants were recruited via Amazon's Mturk platform as part of a larger omnibus study. The original sample included 500 individuals who were asked to complete a mathematical equation at the start of the module and provide information about a class project's due date at the end of the survey. After removing participants who failed both attention checks, the final sample included 470 individuals. On average, the participants' age ranged from 22 to 23 years old, with a majority identifying as male and white. Additionally, most participants held an associate college degree, were unmarried, and reported a household income within the range of $50,000 to $74,999 per year.

The reliability of the survey items was evaluated using Cronbach's alpha (α), which indicated values greater than 0.7 for the trust survey items in all periods for both scenarios. To build the dependent variable, *trust*, the average of the five survey items measuring trust was calculated.[1] Moreover, a dummy variable was created to distinguish participants who were informed about their classmate's history of substance abuse. Additionally, a conspiratorial thinking index was developed to measure participants' predispositions towards conspiracy beliefs. The

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[1] These items were derived from prior trust-based research (Cook et al., 2005).

analysis revealed that participants were less likely to trust students with a history of substance abuse in the property risk scenario. These findings align with prior research, which indicates that individuals with a history of substance abuse are frequently perceived as less dependable and potentially prone to resorting to criminal activities to sustain their addiction (Hammersley et al., 2002).

Additionally, the study revealed that receiving the newsletter was linked to a greater likelihood to trust the student portrayed in the vignettes. These findings indicate that the portrayal of the student's altruistic behavior in the newsletter played a significant role in fostering an enhanced sense of trust among the participants. Another interesting finding was that the newsletter had a greater impact for the treatment group. The introduction of new information through the newsletter was believed to challenge the negative stereotypes associated with drug addiction. More importantly, the newsletter successfully mitigated the differences between the treatment and control groups, to the extent that they became statistically insignificant. This suggests that providing individuals with counter stereotypical information about someone with a history of drug addiction has the potential to alleviate the negative consequences of stereotyping and the stigma surrounding drug addiction.

Conspiratorial predispositions moderated the effect of the newsletter on participants' trust, especially among the individuals in the treatment group. This occurred because participants with high conspiratorial beliefs exhibited greater skepticism towards the information portraying individuals with drug addiction as altruistic leaders. Individuals with high conspiratorial predispositions may possess more deeply ingrained biases and preconceptions and may require additional interventions to reduce their distrust toward drug addicts. Further research is necessary to elucidate the underlying mechanisms that explain how the newsletter reduced participants'

distrust towards the student depicted in the vignette and to determine if similar findings can be replicated for other stigmatized groups. Subsequent studies should also identify additional factors that may influence the effectiveness of interventions aimed at reducing public distrust towards stigmatized groups.

In a separate experiment, an analysis was conducted to examine whether individuals with a history of substance abuse received less social support from friends and family members. For this study, an index was created to measure participants' willingness to provide social support by aggregating 12 questions adapted from prior research (see Barrera et al., 1981). The first four questions measured "instrumental support", which involved providing practical assistance to meet tangible needs. The next four questions measured "informational support" like advice, feedback on actions and useful information. The last four questions measured "emotional support" which included expressions of care, concern, empathy, and sympathy. Participants rated these items on a five-point closed-ended response scale, ranging from "not at all likely" (coded 1) to "extremely likely" (coded 5). The reliability of the survey items was evaluated using Cronbach's alpha (α), with values exceeding 0.6 for the individual dimensions and exceeding 0.8 for the general social support index. Subsequently, the general support index and the independent dimensions of social support were utilized to test the hypotheses.

The findings revealed a negative relationship between the interaction of the experimental conditions (addiction and family kinship) and the outcome variables. The negative coefficients indicated that participants' willingness to provide social support significantly diminished when the individual featured in the scenario had a history of substance abuse and was a family member. Specifically, participants exhibited a reduced likelihood of offering informational support to a family member with a history of substance abuse. This observation may be attributed to the

perception that individuals with a history of substance abuse are unpredictable and lack self-control (Loyd, 2013). Consequently, providing advice or other forms of informational support may fall on deaf ears or evoke anger in the recipient.

This finding aligns with previous studies that have found stigmatized groups (such as those who have been incarcerated or have mental health issues) struggle to find someone to talk to or receive advice from after being released from prison or leaving a clinic (Henderson et al., 2013; Scheidell et al., 2021). Additionally, the study uncovered that participants belonging to racial/ethnic minorities exhibited a higher likelihood of providing social support, specifically instrumental support, to individuals in need. These findings align with prior research that highlights the tendency of minorities to offer assistance to one another, often attributed to their strong emphasis on family and community values (Krause, 2016).

The study findings underscore the discrimination faced by individuals with a history of substance abuse from both their peers and family members. They encounter lower levels of trust and reduced social support compared to those without such a history. Notably, these individuals also experience limited access to social capital within their family networks, particularly concerning informational support. This lack of support may hinder their chances of successful rehabilitation, as they are less likely to surround themselves with supportive individuals who can offer guidance and orientation. Family members, who are often the first to notice changes in mood or behavior, play a crucial role in connecting their loved ones to treatment, resources, and services for their recovery journey.

However, the study reveals that in some cases this behavior is unlikely to occur. To address this gap and enhance support for individuals with a history of substance abuse, government interventions should focus on providing counseling, relevant information, and assistance to guide

them towards appropriate treatment options, housing solutions, and employment opportunities. Furthermore, nurturing awareness within families to cultivate empathy and provide robust support for their loved ones grappling with a history of substance abuse can significantly enhance and accelerate the healing and recovery journey. In the following section, the groundwork is laid by delving into the research background. This includes a comprehensive overview of the key factors and existing insights that have led to the exploration of the dynamics of trust and social support for individuals with a history of substance abuse.

Literature Review

Drug addiction is a complex condition affecting millions of people worldwide, often accompanied by significant stigma (Corrigan et al., 2009; Livingston et al., 2012; Milfeld et al., 2021). According to the Royal College of Psychiatrists' survey for the 'Changing Minds' campaign, individuals with alcoholism and drug addiction face the most stigmatization among people with mental illness. The survey revealed that many respondents viewed those with substance abuse disorders as dangerous, unpredictable, and difficult to communicate with, with a majority blaming them for their conditions (Crisp et al., 2005, 108). This stigma surrounding substance use disorders is more pronounced than that for other health issues in various studies (Corrigan et al., 2005; Crisp et al., 2005; Livingston et al., 2012; Rao et al., 2009). Notably, the United States tends to hold even stronger beliefs in the dangerousness of individuals with mental illness and substance abuse disorders compared to citizens of other developed nations, which can influence public policy and restrict the rights of those with substance disorders (Sciences, 2016).

Studies also indicate that the stigma related to drug addiction permeates multiple aspects of an individual's life, impacting their health, social relationships, and employment opportunities

(Baldwin, 2010; Milfeld et al., 2021; Muncan et al., 2020; van Olphen et al., 2009). Misunderstandings about the nature and causes of addiction, negative societal attitudes, beliefs, and media representations further perpetuate this stigma (Corrigan et al., 2005; Granfield & Cloud, 2001; McGinty et al., 2015; Muncan et al., 2020; Perry, 2020; Radcliffe & Stevens, 2008). Additionally, a prevailing misconception that addiction is solely a matter of choice or lack of self-control, rather than a multifaceted issue, reinforces the discrimination faced by individuals dealing with substance abuse challenges (Hammersley et al., 2002). Such narrow perspectives contribute to the ongoing stigma towards those struggling with substance abuse.

Furthermore, individuals who are in the process of recovery or who have successfully overcome addiction encounter significant obstacles when it comes to reintegrating into society due to the persistent stigma and discrimination associated with their past struggles (Kilian et al., 2021; Troup et al., 2022; Vilsaint et al., 2020b). The negative perceptions associated with individuals who have faced addiction can result in their exclusion from social circles, restricted job prospects, and difficulties in accessing essential services (Practitioners & Experience, n.d.; Vilsaint et al., 2020b). Consequently, those in recovery frequently find themselves facing social and professional isolation, which can have detrimental effects on their overall well-being and impede their progress toward a fulfilling and stable life (Birtel et al., 2017; van Olphen et al., 2009).

Rebuilding trust in interpersonal relationships is a critical aspect of the recovery process, as it provides individuals with the essential social connections, understanding, and encouragement needed during their recovery journey (Kelly et al., 2010). However, the stigma and discrimination faced by individuals who have struggled with addiction make it challenging for them to reconstruct their support network and cultivate a sense of belonging. Biased beliefs and misconceptions about addiction held by family members, friends, and community members can lead to strained

relationships and a lack of support (Vilsaint et al., 2020), resulting in a profound sense of isolation that intensifies feelings of loneliness, shame, and detachment, thereby hindering their progress and well-being.

Moreover, the presence of stereotypes linked to addiction can have detrimental effects on trust and cooperation. Research has consistently demonstrated that stereotypes hold significant sway over the formation and maintenance of trust in social interactions (Fiske, 2018; Lloyd, 2013; Overton et al., 2021; Richey & Ikeda, 2009). Several studies have found that people often rely on stereotypes to assign specific traits to others, leading to biased impressions about them (Fiske, 2018; Link & Phelan, 2017). Research also finds that stereotypes can significantly influence the formation of initial trust evaluations through several mechanisms. Firstly, stereotypes create preconceived expectations about individuals based on their perceived group membership, leading to a heightened reliance on categorization strategies when assessing trust (Cañadas et al., 2015; Leung & Wincenciak, 2019). This bias influences how individuals assume certain traits or behaviors in people based on their group (Lloyd, 2013), shaping their cognitive approach to trust assessments.

Secondly, stereotypes influence the processing and interpretation of information about others. When stereotypes are triggered, individuals tend to prioritize information that aligns with their preconceived beliefs while overlooking or dismissing contradicting data (Sciences, 2016). This skewed information processing affects their cognitive strategies and, consequently, shapes their initial trust judgments. Thirdly, stereotypes give rise to attributional biases, where individuals attribute the behavior or characteristics of others to their perceived group membership rather than considering individual factors (Radcliffe & Stevens, 2008; Van Boekel et al., 2013). This results

in a cognitive approach that relies on stereotypes, influencing how others' behavior is interpreted and ultimately impacting initial trust judgments.

Considering the findings from the literature review, which underscored the significance of stigma in social interactions and the influence of stereotypes on trust formation, the primary objective of the present study is to further investigate how disclosing addiction histories affects perceptions of trustworthiness. Specifically, the study aims to explore how participants' perceptions of an individuals' reliability and trustworthiness change when they learn about their partners' addiction history. Additionally, the research will investigate the potential of counter-stereotypical information in challenging biases and fostering trust building towards this population. By addressing these objectives, the study aims to contribute to our understanding of trust dynamics and the potential influence of counter-stereotypical information in reducing stigma. Ultimately, this research can help inform interventions and strategies to promote more inclusive interactions among individuals with addiction histories and their inner social circles.

Hypotheses Framework

Individuals with a history of substance abuse are stigmatized by society. The Royal College of Psychiatrists' survey for the 'Changing Minds' campaign showed that people with alcoholism and drug addiction are the most stigmatized groups among people with mental illness. According to the survey, most respondents thought individuals with substance abuse disorders were dangerous, unpredictable, and hard to talk with; three out of five respondents thought these individuals were to blame for their conditions (Crisp et al., 2005). Other studies find that substance use disorders are more highly stigmatized than other health issues (Corrigan et al., 2005; Crisp et al., 2005; Livingston et al., 2012; Rao et al., 2009).

The social stigma associated with drug addiction makes non-drug users less likely to interact with individuals that go into rehabilitation. Semple et al., (2005) compared the experiences of a sample of 292 methamphetamine users in California, 210 of whom had never been in treatment and 82 who had. They found that those who had been in treatment were twice as likely to have experiences of rejection (e.g., from friends or family) than those who had not been in treatment. The authors suggest that the increased experiences of rejection stem from 'negative labelling': entry into treatment signifies that they have a serious drug problem with the attendant 'drug addict' label.[2] From these findings, the present study hypothesizes that:

Hypothesis 1: Participants will be less likely to trust individuals that have a history of substance abuse and who go into rehabilitation.[3]

Public perceptions towards individuals with substance use disorders are persistent and hard to eliminate (Lloyd, 2013). Fortunately, research finds that challenging stereotypes can help people change their attitudes towards stigmatized groups (Luty et al., 2009; Rao et al., 2009; Simonds et al., 2021). Effective strategies for addressing social stigma include exposure to counter stereotypical exemplars (FitzGerald et al. 2019), fostering identification with the outgroup (Everett et al., 2015), promoting positive emotions, and communicating positive stories of people with substance use disorders (Livingston et al., 2012). For example, (Luty et al., 2009) found that educational leaflets communicating positive depictions about people with substance use disorders significantly reduced stigmatized attitudes among the public towards heroin and alcohol dependence. Other studies have produced similar findings for individual with mental disorders and

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[2] Research suggests that the factors governing the extent of stigmatization attached to an individual include the perceived danger posed by that person and the extent to which they are seen as being to blame for the stigma (Lloyd, 2013).

[3] Trust depends on both the individual, stable characteristics of the trusting person (e.g., Evans & Revelle, 2008) and the features of the specific trust situation including, for instance, the trustworthiness of the trustee in question (e.g., Snijders & Keren, 2001; also see Fleeson & Leicht, 2006).

the elderly (Rao et al., 2009; Wurtele & Maruyama, 2013). Based on these findings, an intervention was designed to reduce distrust toward the hypothetical student depicted in the vignettes. The intervention involved providing participants with information (a newsletter sent by their college) stating that the student had received an award from a public service organization. It is hypothesized that participants will increase their trust toward the student after receiving the newsletter.[4]

Hypothesis 2: Exposing participants to new information that depicts the student as a role model will increase trust for all groups.

Although it is expected that receiving the newsletter will increase the participants' trust in all groups, there is also a belief that the effect will be more pronounced for individuals with a history of substance abuse. This is because the new information provided in the newsletter will challenge the stereotypes associated with drug addiction. Stigma against people with substance use disorders often arises from beliefs about their dangerousness or the unpredictability of their behavior (Sciences, 2016). Individuals with a history of substance abuse are often perceived as dangerous and desperate, with negative assumptions about their behavior and character (Hammersley et al., 2002). By depicting these individuals as sociable, responsible, and deserving of esteem through the award from the public service organization, it is anticipated that this will challenge the negative stereotype associated with drug addiction.

Hypothesis 3: Exposing the participants to new information that challenges the stereotype associated with drug addiction will have a higher impact for the treatment group.

Finally, the investigation focuses on the factors that moderate the effect of the newsletter on the participants' willingness to trust. Prior research has shown that conspiratorial beliefs

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[4] (Zak et al., 2005) find that, after receiving a strong trust signal, individuals release oxytocin which reduces their distrust towards strangers.

moderate individuals' levels of trust in social institutions and politicians (Einstein & Glick, 2015; Jolley & Douglas, 2014).[5] Conspiratorial beliefs influence an individual's willingness to trust through different channels. For example, some authors posit that conspiratorial beliefs are grounded on corresponding higher-order beliefs (e.g., Wood et al., 2012). Beliefs such as "nothing is as it seems" and "in general, people are selfish" could be the foundation for both conspiracy beliefs and general mistrust. Another channel is negative affect. Conspiratorial beliefs are related to negative emotions such as chronic feelings of powerlessness, lack of personal control (Abalakina-Paap et al., 1999), death-related anxiety (Newheiser et al., 2011), and fear (Grzesiak-Feldman, 2013). Such emotions tend to cause avoidance-oriented reactions (e.g., Elliot & McGregor, 1999; Green & Phillips, 2004), rendering mistrust more likely. Other studies find that conspiratorial thinking is associated with anomie (Abalakina-Paap et al., 1999; Goertzel, 1994; Imhoff & Bruder, 2014), cynicism (Swami, Chamorro-Premuzic, & Furnham, 2010), and paranoia (Brotherton & Eser, 2015).

Since conspiratorial beliefs are not explicitly tested in this experiment, the focus is on the underlying traits that make individuals more susceptible to accepting conspiratorial beliefs. Conspiratorial beliefs are explained by the interaction between information cues and conspiratorial predispositions (Uscinski et al., 2016). Informational cues can influence conspiratorial beliefs, but predispositions determine how likely individuals are to accept those cues (Zaller 1992). In other words, conspiratorial predispositions influence how individuals process new information and draw conclusions from it. It is believed that conspiratorial predispositions will moderate the effect of the new information provided in the newsletter on the participants' willingness to trust. Individuals with conspiratorial predispositions are expected to be more skeptical about information that depicts

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[5] Conspiratorial beliefs are also associated with lower levels of voting, donating, and volunteering (Uscinski et al., 2016).

an individual in a positive light or challenges their existing preconceptions. As a result, it is hypothesized that:

Hypothesis 4: Individuals with high conspiratorial predispositions will experience lower increases in their trust levels than their counterparts after receiving the newsletter.

Previous research has consistently shown that individuals with a history of drug addiction often experience heightened rejection compared to those without such a history (Semple et al., 2005). The negative stereotypes and stigma associated with addiction can create barriers for social support, as potential support providers may harbor reservations about the reliability, trustworthiness, and potential risks associated with helping those with a history of substance abuse. These concerns could lead to a decreased likelihood of individuals offering social support to this stigmatized group, thus contributing to their perceived lack of access to a supportive network. Building on these findings, this study proposes the following hypothesis:

Hypothesis 5: Participants will be less likely to provide support to individuals that have a history of substance abuse.

This study also considers the role of family relationships in shaping social support behaviors. Family members are often considered to be a primary source of support, and individuals may feel a greater sense of responsibility and attachment towards their family members, leading to increased assistance and emotional support (Ermisch et al., 2023; Velleman et al., 2005). Consequently, the study posits that participants may exhibit a higher willingness to offer social support to individuals portrayed as family members (e.g., cousins) compared to those portrayed as childhood friends. Understanding the interplay between drug addiction, family relationships, and social support can provide valuable insights into how individuals navigate support systems for

stigmatized groups and contribute to the development of targeted interventions aimed at reducing stigma and fostering a more inclusive and supportive environment.

Hypothesis 6: Participants will exhibit a higher willingness to provide social support to individuals portrayed as family members (e.g., cousins) compared to individuals portrayed as childhood friends.

Study Design

Participants were randomly assigned to one of two scenarios (property or personal risk) and to a treatment or control group (student has history of substance abuse or doesn't). Then, they responded to survey items that measure different dimensions of trust such as worry or fear about the individual being described, opinions about their competence to complete a task, participant willingness to be vulnerable, and expectations of positive outcomes from the encounter (Simonds et al., 2021). Afterwards, the participants were provided new information about his classmate which stated that he had received an award from a public service organization. The participant redid the trust items plus two new questions that measure the extent to which the participant believes that his or her classmate had changed. One additional question inquired whether the participant thought that the new information had changed their attitudes toward the student.

Participants were recruited through Amazon's Mechanical Turk (MTurk) and were given $2.50 USD for completing the experiment. The original sample included of 500 individuals. However, several individuals failed the attention checks, and their subsequent removal reduced the sample to 470 individuals.[6] All the individuals who participated in the study were residents of

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[6] The attention check questions encompassed a mathematical equation at the survey's outset and an inquiry about the project's due date described in the vignette. Participants were required to select the accurate option from four choices provided.

the USA. The average age of the participants ranged between 22 and 23 years old. The majority of the participants identified as male and white. Moreover, a significant proportion of the participants held an associate college degree and reported being unmarried. The household income of most participants fell within the range of $50,000 to $74,999 per year.

Dependent variable (trust).

Five survey items were used to operationalize trust. These items were derived from previous trust-based research (see Cook et al., 2005) and tap into the elements of trust pertinent to the situation described in the vignette, such as worry or fear about the individual described, competence to complete a task, participant willingness to be vulnerable, and expectation of positive outcomes from the encounter. Cronbach's alpha was computed to evaluate the reliability of the survey items in measuring trust. [7] The results for both periods and both experimental conditions are provided in Table 1.

Table 1. Cronbach alpha tests for trust in different scenarios and periods.

Survey items	α	$sd(\alpha)$
Trust index – personal risk (period 1)	0.70	0.72
Trust index – personal risk (period 2)	0.74	0.76
Trust index – property risk (period 1)	0.73	0.74
Trust index – property risk (period 2)	0.77	0.77

In all cases, the Cronbach's alpha score indicates acceptable reliability (George & Mallery, 2003). This leads to the conclusion that the survey items consistently measure the participants' willingness to trust in all scenarios. As a result, a proxy for individuals' willingness to trust was created by averaging all five survey items.

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[7] The Cronbach alpha test is a measure of internal consistency and scale reliability. It measures how closely related a set of items are as a group.

Treatment

The variable "addict" was created by selecting all participants who received the vignettes where the student had a history of substance abuse. [8] Group demographic balance statistics are presented in Table 2 to demonstrate the effectiveness of the randomization process.

Table 2. Balance table across groups.

Variable	Control (mean)	Treatment (mean)	Control (sd)	Treatment (sd)
Age	22.82	23.25	9.42	10.89
Political Party	1.62	1.56	0.77	0.77
Gender	1.39	1.56	0.49	0.50
Latino	1.69	1.70	0.46	0.46
Race	1.24	1.21	0.72	0.61
Education	6.76	6.65	1.15	1.15
Income	8.20	8.03	2.52	2.56

This table provides an overview of the demographic characteristics of participants across the different groups. The mean and standard deviation values show similarities between the control and treatment groups across all variables, indicating that the randomization process effectively balanced the demographic characteristics of both groups.

Conspiratorial predisposition

Conspiratorial predisposition was measured using the index proposed by Uscinski et al. (2016), defined as "an individual's underlying propensity to view the world in conspiratorial terms." The measurement involved four statements adapted from McClosky and Chong (1985), rated on a Likert scale from 1 to 5. The four items included: "much of our lives are being controlled by plots hatched in secret places," "even though we live in a democracy, a few people will always

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[8] This variable was coded as a dummy when the randomization variable equaled 2 or 4.

run things anyway," "the people who really 'run' the country are not known to the voters," and "big events like wars, the current pandemic, and the outcomes of elections are controlled by small groups of people who are working in secret against the rest of us." A proxy for participants' conspiratorial predispositions was created by averaging their responses to these items. The internal consistency of these responses was determined using Cronbach's alpha, as shown in Table 3.

Table 3. Cronbach alpha for conspiratorial predisposition statements.

Survey items	α	$sd(\alpha)$
Conspiratorial beliefs	0.87	0.88

The high Cronbach's alpha value of 0.87 indicates strong internal consistency among the survey items measuring conspiratorial predispositions, suggesting that the survey items effectively measure individuals' underlying propensity to view the world in conspiratorial terms.

Model equation

The effect of treatment on participants' trust can be described by the following equation:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_1 {*} X_2 + \varepsilon.$$

In this equation, Y_i represents the dependent variable, which is the participant's willingness to trust for individual i. X_1 is the grouping variable, indicating whether the individual belongs to the treatment group (1) or the control group (0). X_2 denotes the period before (0) or after (1) receiving the newsletter. The interaction term, $\beta_3 X_1 {*} X_2$, captures the combined effect of treatment and time on the participant's trust. Finally, ε represents the residual term, accounting for any unexplained variability in the trust scores.

Results

Figure 1 displays coefficient plots derived from the Ordinary Least Squares (OLS) models (refer to Table 7 in Appendix 1A) pertaining to the personal and property risk scenarios.
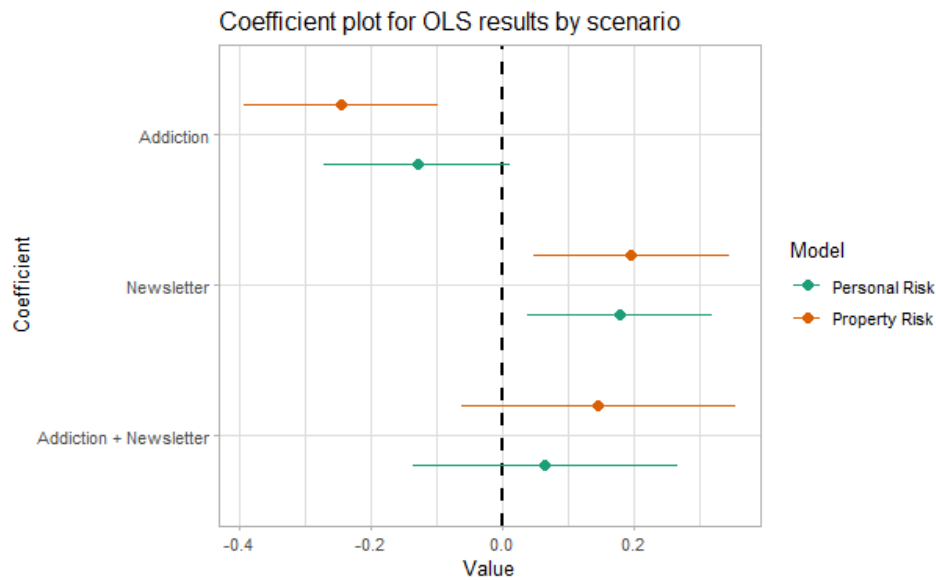
Figure 1. Coefficient plot for OLS results by scenario.

In the personal risk scenario, getting the student with the history of substance abuse reduced trust by an expected 0.130 points (p-value = 0.1). However, after receiving the newsletter, the group´s differences became statistically insignificant. This suggests that the information provided to the participant reduced his distrust towards the student with a history of drug addiction to the point of making him similar to the student with no history of substance abuse. In the property risk scenario, getting the student with the history of substance abuse reduced the average level of trust by 0.246 points (p-value = 0.05). However, after receiving the newsletter, the group´s differences also became statistically insignificant.

The effect of receiving the newsletter

The assumption of the study was that receiving a newsletter that depicted the student as a role model would increase the participants' trust towards their classmate. To assess this hypothesis, the data from both periods was merged into a panel dataset, and an OLS regression with individual fixed effects was conducted. Results are presented below.

Coefficient Plot for Fixed Effects Regression
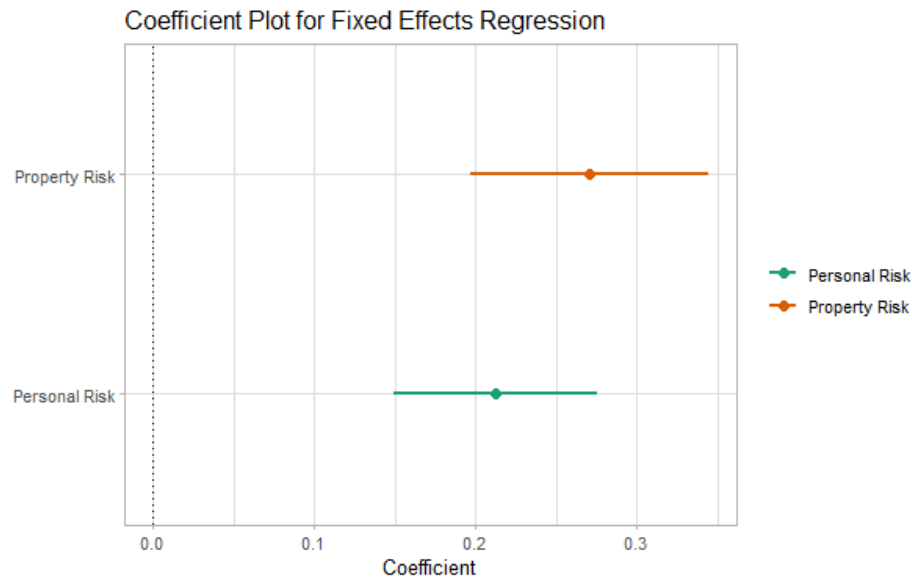
Figure 2. The effect of receiving newsletter on participants' trust.

Receiving the newsletter is associated with higher levels of trust for all participants in both scenarios. In the personal risk scenario, receiving the newsletter is predicted to increase the participants' trust by an average of 0.212 points. This effect is highly significant (p-value = 0.01). In the property risk scenario, receiving the newsletter is predicted to increase the participants' trust by an expected 0.271. The effect was also highly significant (p-value = 0.01). The study concludes that receiving the newsletter reduced the participants' distrust towards the student depicted in the vignettes. [9] Additionally, it was expected that the effect of receiving the newsletter would be

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[9] I also asked the participants if the new information changed their perception about their classmate´s character/habits. Most participant answered yes in the two scenarios (see appendix).

greater for the treatment group compared to the control group, as the additional information challenged the negative stereotype associated with the vignette subject's past drug abuse. To test this hypothesis, the difference in the mean levels of trust by group before and after receiving the newsletter for the two scenarios was computed. Results are provided in Tables 4 and 5.

Table 4. Mean level of trust for the personal risk scenario.

Groups	Trust before challenging stereotype	Trust after challenging stereotype	Difference between means	P-value of coefficient test difference
Control	2.96	3.14	0.18	0.002
Treatment	2.83	3.08	0.25	0.005

In the personal risk scenario, the new information increased the average trust level in the treatment group more than it did in the control group. The trust for participants assigned to the treatment groups increased by 0.289 compared to 0.23 for the control group. The difference between the coefficients was statistically significant (p-value = 0.01). In the property risk scenario, the newsletter increased the trust level more for individuals that have a history of drug addiction (treatment) than for individual that don't have one (control group). The trust within the treatment group increased by 0.34 compared to 0.19 in the control group. The difference between the coefficients was also highly significant (p-value = 0.01).

Table 5. Mean level of trust by group for the property risk scenario.

Groups	Trust before receiving the newsletter	Trust after receiving the newsletter	Difference after receiving the newsletter	P-value of coefficient test difference
Control	2.81	3.0	0.19	1.514417e-06
Treatment	2.56	2.9	0.34	0.004

This evidence supports the hypothesis that providing information that portrays an individual in a counter stereotypical manner has a more significant impact on the treatment group.

This effect can be attributed to the information challenging the negative stereotype associated with drug addiction.

Conspiratorial predispositions and trust

Finally, the hypothesis suggests that individuals with high conspiratorial predispositions will show lower increases in trust levels after receiving the newsletter. This is because such individuals are more likely to experience negative emotions and hold higher order beliefs that make them skeptical of altruistic behavior. To test this hypothesis, an OLS regression with random effects by individual was conducted (refer to table 9 in Appendix 1A), and the results are presented in Figure 3.
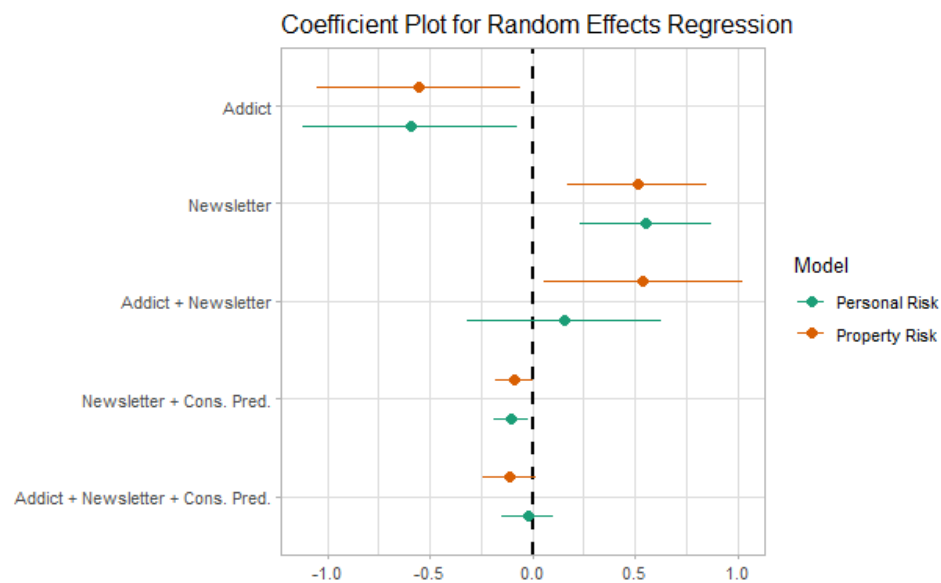
Figure 3. Random effects regression for trust and conspiratorial predispositions.

Participants that received the newsletter are predicted to increase their trust in the personal risk and property risk scenarios. The effect is highly significant in both scenarios (p-value = 0.01). The conspiratorial predisposition of the participant is not statistically significant in period 1 (before receiving the newsletter). However, the interaction between conspiratorial predisposition and

receiving the newsletter is negative and significant in the two scenarios (p-value = 0.05 for personal risk and 0.1 for property risk). This suggests that for every point increase in the conspiratorial predisposition index, the participant will increase their trust less than their non-conspiratorial counterparts after receiving the newsletter.

Notably, the effect of the newsletter is significantly diminished in the property risk scenario among individuals with high conspiratorial predispositions. This suggests that individuals with high conspiratorial predispositions tend to be more skeptical towards information that challenges the stereotype of the drug addict, resulting in a smaller increase in trust levels after receiving the newsletter.

Social support experiment

This experiment extends the previous study by turning attention to the participant´s willingness to provide social support to individuals with a history of substance abuse who are members of either familial or friendship networks. More formally, this study tests the hypothesis that having a history of drug addiction will lead to lowered provision of social support and this will also depend on whether the individual described in the hypothetical scenario is a family member or not. The study used a vignette to portray a scenario where participants interacted with someone close to them who sought help during a difficult time. The vignette had two experimental conditions: one involving an individual with a history of substance abuse and rehabilitation, and the other specifying whether the same person was a family member (cousin) or a childhood friend.

An index was developed to assess participants' willingness to provide social support, comprising 12 questions adapted from previous research (see Barrera et al., 1981). The first four questions measured "instrumental support" or assistance provided to meet tangible needs (i.e. Loan

him money?", "Help him find a job?", "Help him find a place to live?", "Introduce him to your friends?"). The next four questions measured "informational support" like advice-giving, feedback on actions or gathering and sharing of information that can help people know of potential next steps to solve a problem or access resources (i.e. "Give him advice"?, "Counsel him about his life goals?", "Tell him about opportunities, like someone who is looking for a roommate?", "Provide him with information about available social services, like job training?").

The last four questions measured "emotional support" like expressions of caring, concern, empathy, and sympathy (i.e. "Provide him with a listening ear?", "Give him a hug?", "Take him to do something fun?", "Set your feelings aside when talking to him, even if he frustrates you?"). Participants responded to these items using five-point close-ended response categories, ranging from not at all likely (coded 1) to extremely likely (coded 5). The items were aggregated to create a support index, which was used to test the hypotheses. The independent dimensions of the social support index were utilized for the analysis.

Table 6 presents the results of the Cronbach's alpha analysis used to assess the reliability of the survey items for measuring social support and their individual dimensions.[10]

Table 6. Cronbach alpha tests for social support indexes.

Survey items	α	No. of items
Social Support Index	0.824	12
Instrumental Support Index	0.723	4
Informational Support Index	0.644	4
Emotional Support Index	0.627	4

The Cronbach's alpha scores for all dimensions of social support were above 0.6, indicating acceptable reliability (George & Mallery, 2003). The survey items were found to be reliable in measuring participants' willingness to provide social support. A proxy for overall willingness to

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[10] Cronbach's alpha is a measure of internal consistency and scale reliability. It measures how closely related a set of items are as a group.

provide support was created by averaging all twelve survey items. Additionally, separate indexes were built for each dimension of support (instrumental, informational, emotional) by averaging the four corresponding survey items. The study then examined the effects of drug addiction and kinship on the willingness to provide social support, while controlling for other variables known to influence social support provision, such as race/ethnicity, age, gender, and income. Furthermore, the impact of these variables on each individual dimension of social support (instrumental, informational, and emotional) was also analyzed.

Participants were recruited through the platform Connect by Cloud Research and received 80 cents for completing the experiment.[11] A total of 250 individuals were invited to participate in the study. However, only 241 individuals submitted a complete response. The sample was reduced further because some individuals failed the narrative check.[12] This yielded a final sample size of 231. The sample was largely composed of males (125). In terms of race and ethnicity, Whites made up the largest proportion of the sample (195), followed by Black (28), American Indian (3) and 10 individuals were part of other minorities (Samoan, Guamanian, Hawaiian, Japanese, Korean, Asian Indian, Vietnamese, Filipino, Chinese). In terms of age, 55 individuals were 18-29 years old, 66 were 30–44 years old, 65 were 45-59 years old, and 55 were 60 or over. The sample was representative of the USA population according to the 2020 census data.

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[11] Connect is an online research platform that provides recruitment and management of participants for surveys and experiments.

[12] The study's attention checks asked participants to recall the content of shared good memories described in the vignette. Three options were provided: playing in a football team, spending time together as kids, or attending courses at school. The correct response indicated attentive reading and comprehension, ensuring the reliability of participants' data.

Study design

Study participants read one hypothetical vignette and then responded to a series of close-ended survey items. The scenario described a situation in which participants just spent time with a person they knew well and this individual confided that they were going through a rough patch and asked the participant for assistance. The vignette featured two experimental conditions, the first of which was whether the individual described in the scenario had a history of substance abuse and had been in rehabilitation. The second experimental condition was whether this same individual was characterized as a family member (i.e., cousin) or a friend from childhood.

Results

Figure 4 summarizes the results of the OLS regression models for social support presented in Table 11 in Appendix 1B. Model 1 examines the impact of kinship (family member vs. friend) and the individual's history of substance abuse on the social support index while controlling for minority status, age, gender, income, and education. Each model also includes an interaction term to measure the effect of being assigned to an individual with a history of substance abuse who is also a family member. Additionally, individual dimensions of social support are used as dependent variables in separate models. Model 2 analyzes the effect of the experimental conditions and controls on instrumental support, Model 3 does the same on informational support, and Model 4 does it on emotional support.
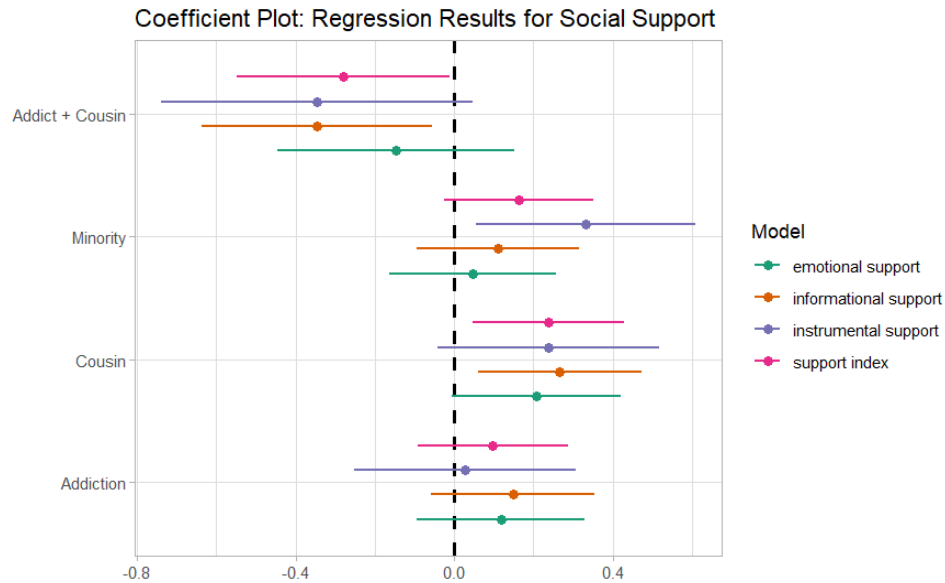
Figure 4. Coefficient plot of regression analyses for social support

The plot demonstrates that individuals are more willing to provide social support to family members. Being a family member is predicted to increase the social support index by 0.234 and informational support by 0.263. The variables are statistically significant (p-value = 0.05). Similarly, being a minority is associated with increased social support. Specifically, participants who are members of a minority are predicted to increase "instrumental support" by 0.337. This variable is statistically significant (p-value = 0.05). The variable "addict" is not statistically significant by itself. In contrast, being a family member (cousin) and having a history of substance abuse, reduces the participant willingness to provide social support. Specifically, the participant is predicted to reduce his willingness to provide social support by 0.278 and "informational support" by 0.292. The variables are statistically significant (p = 0.05). The participant´s age, income, education, and gender are not statistically relevant.

Discussion

  This study serves as a significant contribution to our understanding of how revealing addiction histories can influence perceptions of trustworthiness. It specifically highlights that individuals who have successfully completed rehabilitation for substance abuse and are in the process of recovery tend to be perceived as less reliable by their peers. The findings underscore the unfortunate reality that this already vulnerable population, grappling with the complexities of addiction and recovery, is unfairly burdened with negative stereotypes and exclusionary attitudes that hinder their successful reintegration into society. These findings are consistent with existing research, which also reveals that individuals from stigmatized groups encounter challenges in building trusting relationships with others (Semple et al., 2005; Simonds et al., 2021).

  This study significantly contributes to the literature by quantifying bias directed at individuals with substance abuse histories. It highlights that situations involving property risk elicit heightened vigilance, likely stemming from media-fueled stereotypes (Muncan et al., 2020; Radcliffe & Stevens, 2008). These stereotypes portray individuals with a history of substance abuse as potential perpetrators of property crimes, further propagating the "junkie" stereotype that implies a tendency for theft to sustain addiction or engage in harmful behaviors. The perpetuation of such stigmatizing narratives not only perpetuates discrimination but also hinders the process of reintegration and recovery for those in substance abuse recovery. On a positive note, the study revealed that providing information challenging negative stereotypes of drug addiction helped reduce initial distrust towards the treatment group.

  However, its effectiveness was influenced by individuals' conspiratorial predispositions. Those with a tendency toward conspiracy beliefs displayed greater skepticism towards the provided information. Conspiracy believers may have lower a priori trustworthiness expectations,

making them more doubtful of any trustee, regardless of their characteristics (Frenken & Imhoff, 2022). Throughout the study, this skepticism was especially evident when information portrayed individuals from stigmatized groups as exemplary individuals. Existing research indicates that individuals tend to interpret information that aligns with their beliefs while dismissing conflicting viewpoints (Zaller, 1992). This tendency could be particularly pronounced among individuals with a strong conspiratorial predisposition. Shifting attitudes within this subgroup could necessitate sustained and targeted interventions, as they inherently display wariness towards information that contradicts established stereotypes or challenges deeply ingrained convictions.

In the second experiment, the effect of drug addiction and friend and family networks on social support was explored. The results indicated that the willingness to offer social support to individuals with a history of substance abuse depended on whether the person was a member of the participant's extended family. Specifically, participants were less likely to provide informational support to a family member with a history of substance abuse. Various factors might contribute to this outcome. Some individuals may perceive their cousin as being distant or not closely connected enough to discuss the situation openly. Others might find it challenging to discuss the topic, unsure of how their cousin would react to their advice. Moreover, the sensitive nature of addiction as a subject might make some people uncomfortable discussing it with family members, including cousins.

These findings align with other studies that observed stigmatized groups (such as those previously incarcerated or with mental illness) struggling to find someone to talk to or seek advice from after leaving prison or the clinic (Henderson et al., 2013; Scheidell et al., 2021). This lack of supportive networks may hinder successful rehabilitation, as individuals are less likely to surround themselves with supportive people who offer guidance and assistance. To address this deficit,

government interventions could provide counseling and relevant information for individuals facing addiction challenges or undergoing recovery, guiding them towards appropriate treatment options and helping them find housing or employment.

Supportive networks that offer guidance and information are essential for individuals transitioning out of rehabilitation as they reintegrate into society and rebuild their lives. These networks play a crucial role in helping them access relevant job information and connect with a supportive community during their recovery journey. However, the negative stereotypes and stigma associated with addiction can create barriers for social support, as potential support providers may harbor reservations about the potential risks associated with helping those with a history of substance abuse. This hesitancy among potential support providers can inadvertently perpetuate a cycle of isolation and further exacerbate the challenges faced by individuals in recovery.

As a result, the perceived dearth of available support resources may become a reality, impacting these individuals' access to critical assistance during a pivotal phase of their lives. Addressing this requires comprehensive efforts, including educational initiatives, awareness campaigns, and policy reforms, all directed toward nurturing a genuinely inclusive and empathetic atmosphere for those navigating the demanding journey of conquering addiction-related obstacles. Through these concerted efforts, we can pave the way for a more compassionate and supportive society, empowering individuals on their journey to conquer addiction and embrace a healthier and brighter future.

Future research

Future vignette-based studies should consider the demographics of individuals with a history of substance abuse, as this could have varying effects on interactions. Existing literature

has shown that the interplay between criminal stigma, race, and gender can lead to diverse outcomes (van Olphen et al., 2009; Woo, 2017). Including variables such as the type of substance the individual was addicted to and the number of times they have been in rehabilitation could also provide valuable insights in future studies. Additionally, investigating the effect of beliefs about recovery may be meaningful in extending trust and willingness to provide social support to former drug addicts. Furthermore, it would be beneficial to explore whether these findings extend to other stigmatized groups and identify other factors that might influence the effectiveness of interventions aimed at diminishing stigma, while enhancing trust and support for such groups. This could help broaden the understanding of how social support can be effectively fostered for various stigmatized populations.

Limitations

The study's applicability beyond Mturk respondents is limited due to demographic biases introduced by the platform. MTurk workers are younger, more highly educated, and less politically diverse (Goodman, Cryder, & Cheema, 2013). The predominantly young white male sample further restricts generalizability. The results primarily speak to the perceptions and behaviors of this specific population, and caution should be exercised when extrapolating these findings to individuals with different characteristics and backgrounds. Additionally, the familiarity of Mturk participants with common experimental manipulations may affect their responses, raising concerns about 'non-naivete.'

Moreover, the hypothetical nature of the survey experiments may impact the applicability of the findings to real-world situations. The omnibus design of the study, although not directly overlapping with the experiments, could potentially introduce contamination effects. To strengthen

external validity, future research should replicate the study with diverse samples and real-life scenarios to assess the interventions' practical effectiveness in fostering trust and cooperation in different settings. Thus, while the study provides valuable insights, researchers should interpret the findings cautiously, considering the limitations related to the Mturk sample and potential contamination effects.

References:

Adams, Z. W., Taylor, B. G., Flanagan, E., Kwon, E., Johnson-Kwochka, A. V., Elkington, K. S., Becan, J. E., & Aalsma, M. C. (2021). Opioid Use Disorder Stigma, Discrimination, and Policy Attitudes in a National Sample of U.S. Young Adults. *Journal of Adolescent Health*, *69*(2), 321–328. https://doi.org/10.1016/j.jadohealth.2020.12.142

Alós-Ferrer, C., & Farolfi, F. (2019). Trust Games and Beyond. *Frontiers in Neuroscience*, *13*(September), 1–14. https://doi.org/10.3389/fnins.2019.00887

Anderson, L. R., Mellor, J. M., & Milyo, J. (2006). Induced heterogeneity in trust experiments. *Experimental Economics*, *9*(3), 223–235. https://doi.org/10.1007/s10683-006-9124-2

Ashraf, N., Bohnet, I., & Piankov, N. (2006). Decomposing trust and trustworthiness. *Experimental Economics*, *9*(3), 193–208. https://doi.org/10.1007/s10683-006-9122-4

Baldwin, L. M. S. C. M. D. S. (2010). Job Loss Discrimination and Former Substance Use Disorders. *Drug Alcohol Depend*, *23*(110), 1–7. https://doi.org/10.1038/nature08365.Reconstructing

Bargh, J. A., & Williams, E. L. (2006). *The Automaticity of Social Life*.

Barrera, M., Sandier, I. N., & Ramsay, T. B. (1981). Preliminary Development of a Scale of Social Support: Studies on College Students I. In *American Journal of Community Psychology* (Vol. 9, Issue 4).

Birtel, M. D., Wood, L., & Kempa, N. J. (2017). Stigma and social support in substance abuse: Implications for mental health and well-being. *Psychiatry Research*, *252*(c), 1–8. https://doi.org/10.1016/j.psychres.2017.01.097

Brülhart, M., & Usunier, J. C. (2012a). Does the trust game measure trust? *Economics Letters*, *115*(1), 20–23. https://doi.org/10.1016/j.econlet.2011.11.039

Brülhart, M., & Usunier, J. C. (2012b). Does the trust game measure trust? *Economics Letters*, *115*(1), 20–23. https://doi.org/10.1016/j.econlet.2011.11.039

Calabuig, V., Fatas, E., Olcina, G., & Rodriguez-Lara, I. (2016). Carry a big stick, or no stick at all: Punishment and endowment heterogeneity in the trust game. *Journal of Economic Psychology*, *57*, 153–171. https://doi.org/10.1016/j.joep.2016.09.006

Cañadas, E., Rodríguez-Bailón, R., & Lupiáñez, J. (2015). The effect of social categorization on trust decisions in a trust game paradigm. *Frontiers in Psychology*, *6*(OCT). https://doi.org/10.3389/fpsyg.2015.01568

Case, T., Gim, H., Gahler, H., & Harwood, J. (2021). For the love of music: Changing Whites' stereotypes of Asians with mediated intergroup musical contact. *Journal of International and Intercultural Communication*, *0*(0), 1–19. https://doi.org/10.1080/17513057.2021.1985590

Chaudhuri, A., & Gangadharan, L. (2007). An Experimental Analysis of Trust and Trustworthiness. In *Journal* (Vol. 73, Issue 4).

Chetty, R., Hofmeyr, A., Kincaid, H., & Monroe, B. (2021). The Trust Game Does Not (Only) Measure Trust: The Risk-Trust Confound Revisited. *Journal of Behavioral and Experimental Economics* , *90*. https://doi.org/10.1016/j.socec.2020.101520

Christie, N. C. (2021). The role of social isolation in opioid addiction. *Social Cognitive and Affective Neuroscience*, *16*(7), 645–656. https://doi.org/10.1093/scan/nsab029

Corrigan, P. W., Kuwabara, S. A., & O'Shaughnessy, J. (2009). The public stigma of mental illness and drug addiction: Findings from a stratified random sample. *Journal of Social Work*, *9*(2), 139–147. https://doi.org/10.1177/1468017308101818

Corrigan, P. W., Lurie, B. D., Goldman, H. H., Slopen, N., Medasani, K., & Phelan, S. (2005). How adolescents perceive the stigma of mental illness and alcohol abuse. *Psychiatric Services*, *56*(5), 544–550. https://doi.org/10.1176/appi.ps.56.5.544

Cox, J. C. (2004). How to identify trust and reciprocity. *Games and Economic Behavior*, *46*(2), 260–281. https://doi.org/10.1016/S0899-8256(03)00119-2

Crisp, A., Gelder, M., Goddard, E., & Meltzer, H. (2005). Stigmatization of people with mental illnesses: a follow-up study within the Changing Minds campaign of the Royal College of Psychiatrists. *World Psychiatry : Official Journal of the World Psychiatric Association (WPA)*, *4*(2), 106–113.

Dannatt, L., Ransing, R., Calvey, T., Scheibein, F., Saad, N. A., Shirasaka, T., Ramalho, R., Pant, S., Vadivel, R., Siste, K., Stowe, M. J., Kalita, K. N., Boujraf, S., Testa, R., Arya, S., Morgan, N., & Grandinetti, P. (2021). The Impact of Stigma on Treatment Services for People With Substance Use Disorders During the COVID-19 Pandemic—Perspectives of NECPAM Members. *Frontiers in Psychiatry*, *12*(March), 10–13. https://doi.org/10.3389/fpsyt.2021.634515

Dobkin, P. L., De Civita, M., Paraherakis, A., & Gill, K. (2002). The role of functional social support in treatment retention and outcomes among outpatient adult substance abusers. *Addiction*, *97*(3), 347–356. https://doi.org/10.1046/j.1360-0443.2002.00083.x

Dunkel-Schetter, C. , & S. L. A. (1990). Determinants of social support provision in personal relationships. *Journal of Social and Personal Relationships*, *7*(4), 437–450.

Eaton, K., Ohan, J. L., & Dear, G. (2015). The stigmatisation of the provision of services for alcohol and other drug users: A systematic literature review. *Drugs: Education, Prevention and Policy*, *22*(1), 19–25. https://doi.org/10.3109/09687637.2014.977230

Fairley, K., Sanfey, A., Vyrastekova, J., & Weitzel, U. (2016). Trust and risk revisited. *Journal of Economic Psychology*, *57*, 74–85. https://doi.org/10.1016/j.joep.2016.10.001

Feelemyer, J. P., Don C Des Jarlais, Kamyar Arasteh, Phillips, B. W., & Hagan, H. (2014). Changes in Quality of Life (WHOQOL-BREF) and Addiction Severity Index (ASI) among participants in Opioid Substitution Treatment (OST) in Low and Middle Income Countries: An International Systematic Review. *Drug Alcohol Depend.*, *1*(134), 1–17. https://doi.org/10.1016/j.earlhumdev.2006.05.022

Fiske, S. T. (2018). Stereotype Content: Warmth and Competence Endure. *Current Directions in Psychological Science*, *27*(2), 67–73. https://doi.org/10.1177/0963721417738825

Franke, M. L., Lersner, U. von, Essel, O. Q., Adorjan, K., Schomerus, G., Gómez-Carrillo, A., Tam Ta, T. M., Böge, K., Mobashery, M., Dettling, M., Diefenbacher, A., Angermeyer, M. C., & Hahn, E. (2019). The relationship between causal beliefs and desire for social distance towards people with schizophrenia and depression: Results from a survey of young Ghanaian adults. *Psychiatry Research*, *271*, 220–225. https://doi.org/10.1016/j.psychres.2018.11.030

Frenken, M., & Imhoff, R. (2022). Don't trust anybody: Conspiracy mentality and the detection of facial trustworthiness cues. *Applied Cognitive Psychology*, *April*, 1–10. https://doi.org/10.1002/acp.3955

Gambetta, D. (2000). Can We Trust Trust? In D. Gambetta (Ed.), *Trust: Making and Breaking Cooperative Relations* (pp. 213–237). University of Oxford. https://www.researchgate.net/publication/255682316

George, Darren., & Mallery, Paul. (2003). *SPSS for Windows Step by Step: A Simple Guide and Reference. 14.0 Update.* (4th ed.). Allyn & Bacon.

Granfield, R., & Cloud, W. (2001). Social context and "natural recovery": The role of social

    capital in the resolution of drug-associated problems. *Substance Use and Misuse*, *36*(11),

    1543–1570. https://doi.org/10.1081/JA-100106963

Hammersley, R., Reid, M., & Hammersley, R. (2002). Why the pervasive addiction myth is still

    believed. *Addiction Research and Theory*, *10*(1), 7–30.

    https://doi.org/10.1080/16066350290001687

Henderson, C., Evans-Lacko, S., & Thornicroft, G. (2013). Mental illness stigma, help seeking,

    and public health programs. *American Journal of Public Health*, *103*(5), 777–780.

    https://doi.org/10.2105/AJPH.2012.301056

Holm, H., & Nystedt, P. (2008). Trust in surveys and games - A methodological contribution on

    the influence of money and location. *Journal of Economic Psychology*, *29*(4), 522–542.

    https://doi.org/10.1016/j.joep.2007.07.010

House, J. S. (1981). *Work stress and social support*. Addison-Wesley Pub. Co.

Houser, D., Schunk, D., & Winter, J. (2010). Distinguishing trust from risk: An anatomy of the

    investment game. *Journal of Economic Behavior and Organization*, *74*(1–2), 72–81.

    https://doi.org/10.1016/j.jebo.2010.01.002

Hürriyetoğlu, Ali., Tanev, H., Yörük, E., & Zavarella, V. (2020). Workshop on Automated Event

    Extraction of Socio-political Events from News. In *Proceedings of the Workshop on*

    Automated Extraction of Socio-political Events from News 2020 (Issue May).

Johnson, N. D., & Mislin, A. A. (2011). Trust games: A meta-analysis. *Journal of Economic*

    Psychology, *32*(5), 865–889. https://doi.org/10.1016/j.joep.2011.05.007

Jorm, A. F., & Oh, E. (2009). Desire for social distance from people with mental disorders: a

    review. In *Australian and New Zealand Journal of Psychiatry* (Vol. 43).

Kilian, C., Manthey, J., Carr, S., Hanschmidt, F., Rehm, J., Speerforck, S., & Schomerus, G. (2021). Stigmatization of people with alcohol use disorders: An updated systematic review of population studies. *Alcoholism: Clinical and Experimental Research*, *45*(5), 899–911. https://doi.org/10.1111/acer.14598

Krause, N. (2016). Assessing Supportive Social Exchanges Inside and Outside Religious Institutions: Exploring Variations among Whites, Hispanics, and Blacks. *Social Indicators Research*, *128*(1), 131–146. https://doi.org/10.1007/s11205-015-1022-6

Lawrence, B. (2004). Stereotypes and stereotyping: A moral analysis. *Philosophical Papers*, *33*(3), 251–289.

Leung, H. T. T., & Wincenciak, J. (2019). Discrepancy between first impression and social description, and its effect on people's attitude. *Humanities and Social Sciences Reviews*, *7*(1), 11–18. https://doi.org/10.18510/hssr.2019.712

Link, B. G., & Phelan, J. C. (2017). Labeling and Stigma. *A Handbook for the Study of Mental Health: Social Contexts, Theories, and Systems*, 393–408. https://doi.org/10.1017/9781316471289.024

Li, P. (n.d.). *Social Support and Discrimination: The Experiences of Recovering Social Support and Discrimination: The Experiences of Recovering Heroin Addicts in Kunming, China Heroin Addicts in Kunming, China*. https://digitalcollections.sit.edu/isp_collection

Livingston, J. D., Milne, T., Fang, M. L., & Amari, E. (2012). The effectiveness of interventions for reducing stigma related to substance use disorders: A systematic review. *Addiction*, *107*(1), 39–50. https://doi.org/10.1111/j.1360-0443.2011.03601.x

Lloyd, C. (2013). The stigmatization of problem drug users: A narrative literature review. *Drugs: Education, Prevention and Policy*, *20*(2), 85–95. https://doi.org/10.3109/09687637.2012.743506

Luty, J., Umoh, O., & Nuamah, F. (2009). Effect of brief motivational interviewing on stigmatised attitudes towards mental illness. *Psychiatric Bulletin*, *33*(6), 212–214. https://doi.org/10.1192/pb.bp.108.020925

Mayer et al. (1995). An Integrative Model of Organizational Trust Author (s): Roger C . Mayer , James H . Davis and F . David Schoorman Published by : Academy of Management Stable URL : http://www.jstor.com/stable/258792 REFERENCES Linked references are available on JSTOR f. *Academy of Management Review*, *20*(3), 709–734.

McGinty, E. E., Goldman, H. H., Pescosolido, B., & Barry, C. L. (2015). Portraying mental illness and drug addiction as treatable health conditions: Effects of a randomized experiment on stigma and discrimination. *Social Science and Medicine*, *126*, 73–85. https://doi.org/10.1016/j.socscimed.2014.12.010

Milfeld, T., Haley, E., & Flint, D. J. (2021). A Fresh Start for Stigmatized Groups: The Effect of Cultural Identity Mindset Framing in Brand Advertising. *Journal of Advertising*, *50*(5), 603–621. https://doi.org/10.1080/00913367.2021.1913264

Muncan, B., Walters, S. M., Ezell, J., & Ompad, D. C. (2020). "they look at us like junkies": Influences of drug use stigma on the healthcare engagement of people who inject drugs in New York City. *Harm Reduction Journal*, *17*(1), 1–9. https://doi.org/10.1186/s12954-020-00399-8

Overton, J., Fretwell, M. D., & Dum, C. P. (2021). Who do you trust? College students' attribution of stigma to peers with incarceration histories. *Journal of Experimental Criminology*. https://doi.org/10.1007/s11292-021-09463-0

Perry, B. L. ;Bernice A. P. A. C. K. (2020). The unique nature of public stigma toward non-medical prescription opioid use and dependence. *Addiction*, *115*, 23172326.

Perry, B. L., Pescosolido, B. A., & Krendl, A. C. (2020). The unique nature of public stigma toward non-medical prescription opioid use and dependence: a national study. *Addiction*, *115*(12), 2317–2326. https://doi.org/10.1111/add.15069

Practitioners, C. J., & Experience, L. (n.d.). *The Stigmatization of Justice-involved Individuals with Substance Use Disorders*.

Pryor, J., B. Reeder, Glenn D. Monroe, & Andrew E. (2012). The infection of bad company. Stigma by association. In *Journal of Personality and Social Psychology* (Vol. 102, Issue 2).

Putnam, R. D. (2000). *Bowling alone : the collapse and revival of American community*. Simon & Schuster.

Radcliffe, P., & Stevens, A. (2008). Are drug treatment services only for "thieving junkie scumbags"? Drug users and the management of stigmatised identities. *Social Science and Medicine*, *67*(7), 1065–1073. https://doi.org/10.1016/j.socscimed.2008.06.004

Rao, H., Mahadevappa, H., Pillay, P., Sessay, M., Abraham, A., & Luty, J. (2009). A study of stigmatized attitudes towards people with mental health problems among health professionals. *Journal of Psychiatric and Mental Health Nursing*, *16*(3), 279–284. https://doi.org/10.1111/j.1365-2850.2008.01369.x

Sapienza, P., Toldra-Simats, A., & Zingales, L. (2013a). Understanding trust. *Economic Journal*, *123*(573), 1313–1332. https://doi.org/10.1111/ecoj.12036

Sapienza, P., Toldra-Simats, A., & Zingales, L. (2013b). UNDERSTANDING TRUST. In
Source: The Economic Journal (Vol. 123, Issue 573).

Scheidell, J. D., Dyer, T. V., Hucks-Ortiz, C., Abrams, J., Mazumdar, M., Cleland, C., Irvine, N.,
Turpin, R. E., Severe, M., Mayer, K., & Khan, M. (2021). Characterisation of social support
following incarceration among black sexual minority men and transgender women in the
HPTN 061 cohort study. *BMJ Open*, *11*(9), 1–10. https://doi.org/10.1136/bmjopen-2021-
053334

Sciences, S. (2016). Ending discrimination against people with mental and substance use
disorders: The evidence for stigma change. In *Ending Discrimination Against People with
Mental and Substance Use Disorders: The Evidence for Stigma Change*.
https://doi.org/10.17226/23442

Semple, S. J., Grant, I., & Patterson, T. L. (2005). Utilization of drug treatment programs by
methamphetamine users: The role of social stigma. *American Journal on Addictions*, *14*(4),
367–380. https://doi.org/10.1080/10550490591006924

Simonds, R., Reisig, M. D., Trinkner, R., & Holtfreter, K. (2021). The effect of prior
incarceration on trust and social support: results from two factorial vignette studies. In
Journal of Offender Rehabilitation (Vol. 60, Issue 7, pp. 464–484).
https://doi.org/10.1080/10509674.2021.1966154

Tang, Y., & Gong, Z. (2023). Trust game, survey trust, are they correlated? Evidence from
China. *Current Psychology*, *February*. https://doi.org/10.1007/s12144-023-04448-w

Troup, L. J., Erridge, S., Ciesluk, B., & Sodergren, M. H. (2022). Perceived Stigma of Patients
Undergoing Treatment with Cannabis-Based Medicinal Products. *International Journal of
Environmental Research and Public Health*, *19*(12). https://doi.org/10.3390/ijerph19127499

Uscinski, J. E., Klofstad, C., & Atkinson, M. D. (2016). What Drives Conspiratorial Beliefs? The Role of Informational Cues and Predispositions. *Political Research Quarterly*, *69*(1), 57–71. https://doi.org/10.1177/1065912915621621

Van Boekel, L. C., Brouwers, E. P. M., Van Weeghel, J., & Garretsen, H. F. L. (2013). Stigma among health professionals towards patients with substance use disorders and its consequences for healthcare delivery: Systematic review. *Drug and Alcohol Dependence*, *131*(1–3), 23–35. https://doi.org/10.1016/j.drugalcdep.2013.02.018

van Olphen, J., Eliason, M. J., Freudenberg, N., & Barnes, M. (2009). Nowhere to go: How stigma limits the options of female drug users after release from jail. *Substance Abuse: Treatment, Prevention, and Policy*, *4*, 1–10. https://doi.org/10.1186/1747-597X-4-10

Vilsaint, C. L., Hoffman, L. A., & Kelly, J. F. (n.d.). *Perceived discrimination in addiction recovery: Assessing the prevalence, nature, and correlates using a novel measure in a U.S. National sample HHS Public Access*. https://doi.org/10.1016/j.drugalcdep

Vilsaint, C. L., Hoffman, L. A., & Kelly, J. F. (2020). Perceived discrimination in addiction recovery: Assessing the prevalence, nature, and correlates using a novel measure in a U.S. National sample. *Drug and Alcohol Dependence*, *206*, 1–19. https://doi.org/10.1016/j.drugalcdep.2019.107667

Woo. (2017). 乳鼠心肌提取 HHS Public Access. *Physiology & Behavior*, *176*(1), 139–148.

Wurtele, S. K., & Maruyama, L. (2013). Changing Studentsâ€™ Stereotypes of Older Adults. *Teaching of Psychology*, *40*(1), 59–61. https://doi.org/10.1177/0098628312465867

Appendix 1A

Table 7. OLS regressions (all scenarios)

	Dependent variables	
	Personal Risk	Property Risk
Addict	-0.130[*]	-0.246[***]
	(0.071)	(0.074)
Newsletter	0.180[**]	0.197[***]
	(0.070)	(0.074)
Addict*Newsletter	0.066	0.146
	(0.100)	(0.105)
Constant	2.964[***]	2.807[***]
	(0.050)	(0.053)
Observations	466	470
R^2	0.045	0.078
Adjusted R^2	0.039	0.073
Residual Std. Error	0.541 (df = 462)	0.566 (df = 466)
F Statistic	7.341[***] (df = 3; 462)	13.221[***] (df = 3; 466)
Note:		[*]$p<0.1$; [**]$p<0.05$; [***]$p<0.01$
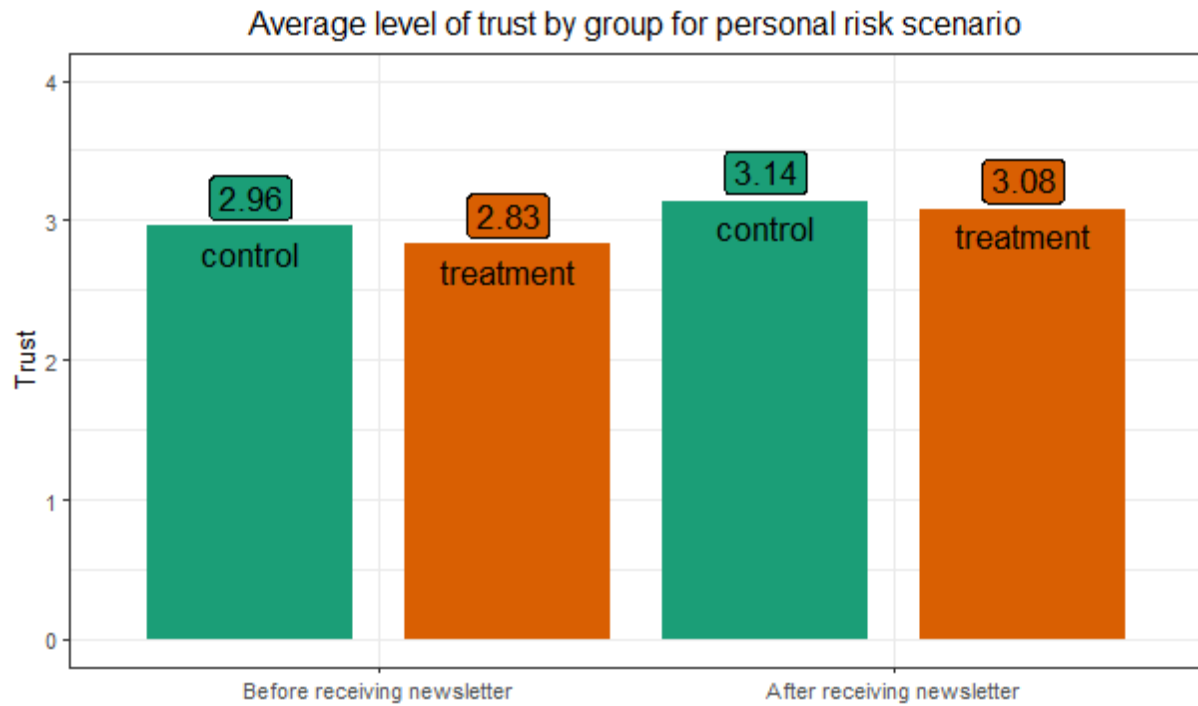
Figure 5. Bar plot with mean differences in personal risk scenario.
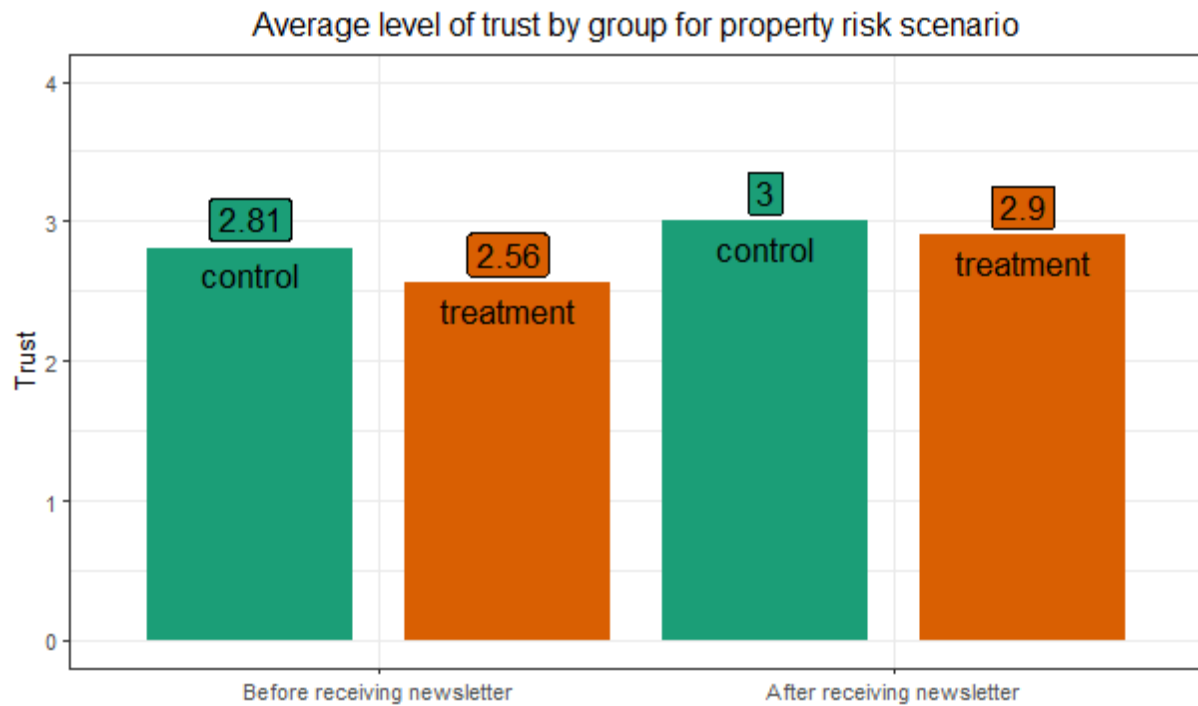
Figure 6. Bar plot with mean differences in property risk scenario.

Table 8. Anova tests for group differences.

One-way analysis of means (not assuming equal variances)			
data: trust in personal_risk scenario and addict			
F = 3.5252	num df = 1.00	denom df = 230.22	p-value = 0.06171

One-way analysis of means (not assuming equal variances)			
data: trust_personal_harm2 and addict			
F = 0.77365	num df = 1.00	denom df = 230.22	p-value = 0.38

One-way analysis of means			
data: trust_property_harm1 and addict			
			p-value =
F = 11.759	num df = 1	denom df = 233	0.0007158

One-way analysis of means (not assuming equal variances)			
data: trust_property_harm2 and addict			
F = 1.7007	num df = 1.00	denom df = 233	p-value = 0.1935

Table 9. Random effects regression for trust and conspiratorial predispositions.

	Dependent variables	
	Personal Risk	Property Risk
Addict	-0.597**	-0.553**
	(0.262)	(0.248)
Newsletter	0.550***	0.511***
	(0.160)	(0.170)
Conspiratorial predisposition Index	-0.066	0.001
	(0.048)	(0.048)
Addict*Newsletter	0.154	0.538**
	(0.235)	(0.242)
Addict*Cons. Pred.	0.129*	0.088
	(0.070)	(0.068)
Newsletter1*Cons. Pred.	-0.104**	-0.091*
	(0.043)	(0.047)
Addict*Newsletter*Cons. Pred.	-0.022	-0.112*
	(0.063)	(0.067)
Constant	3.200***	2.804***

	(0.178)	(0.175)
Observations	466	470
R^2	0.132	0.167
Adjusted R^2	0.119	0.154
F Statistic	69.902***	92.303***

Note: *p<0.1; **p<0.05; ***p<0.01

Additional questions

The participants were asked the following question: "Do you think the new information changed your perception about your classmate's character/habits?" The answers to this question are presented below by group.

Table 10. Participant's perception about the impact of the newsletter.

Personal Risk Scenario		
	Control	Treatment
Yes	80	92
No	29	16
Don´t Know	9	7

Property Risk Scenario		
	Control	Treatment
Yes	87	96
No	22	19
Don´t Know	7	4

Appendix 1B: Social Support Experiment

Table 11. Regression results for social support models.

	Dependent variables			
	Support Index	Instrumental Support	Informational Support	Emotional Support
Addict	0.098	0.027	0.149	0.118
	(0.095)	(0.139)	(0.103)	(0.106)
Cousin	0.238**	0.238*	0.267**	0.208*
	(0.096)	(0.140)	(0.104)	(0.107)
Minority	0.163*	0.331**	0.109	0.048
	(0.094)	(0.138)	(0.102)	(0.105)
Age	0.003	0.003	0.0005	0.004
	(0.002)	(0.004)	(0.003)	(0.003)
Income	0.010	0.004	0.011	0.014
	(0.013)	(0.020)	(0.015)	(0.015)
Education	0.024	0.023	0.032	0.017
	(0.028)	(0.041)	(0.031)	(0.031)
Male	-0.038	0.055	-0.058	-0.111
	(0.069)	(0.101)	(0.074)	(0.077)
Addict*Cousin	-0.280**	-0.346*	-0.345**	-0.147
	(0.134)	(0.196)	(0.145)	(0.149)
Constant	3.705***	3.206***	3.972***	3.936***
	(0.207)	(0.303)	(0.224)	(0.231)
Observations	231	231	231	231
R^2	0.058	0.059	0.051	0.050
Adjusted R^2	0.024	0.026	0.017	0.015
Residual Std. Error (df = 222)	0.505	0.741	0.547	0.563
F Statistic (df = 8; 222)	1.709*	1.754*	1.496	1.448

Note: *p<0.1; **p<0.05; ***p<0.01

Experiment Vignettes

Personal Harm Risk

It's spring break at college and you're staying in town because you have an important class project that is due shortly after break. You roommates wished you luck on the project before leaving town on break. A classmate of yours has offered to come over to your place to work on the class project together. You met this person in class at the beginning of the semester and you sit near him in class and talk to him regularly. You even attended a group study session that he attended where he told everyone that he [wasn't leaving town for spring break (Control Condition)] [had struggled with substance abuse and has been in rehabilitation (Experimental Condition)].

Property Harm Risk

It's spring break at college and you're going out of town for the week. Since your roommates are also leaving town, you'll need someone to watch your place. A classmate has offered to keep an eye on your place over spring break. You met this person in class at the beginning of the semester and you sit near him in class and talk regularly. You even attended a group study session that he also attended where he told everyone that he [wasn't leaving town for spring break (Control Condition)] [had struggled with substance abuse and has been in rehabilitation (Experimental Condition)].

Note: These vignettes were adapted from Simonds et al. (2021) research on incarceration, trust, and social support.

Newsletter

One day after your classmate offered to come over to your place [to work on the class project together (personal harm) /to watch over your place (property harm)], you receive a newsletter from

your college stating that your classmate has been recognized for outstanding leadership by a prestigious group that provides public service. Please answer the following questions:

Survey Questions

1. How worried would you be about having this person (over at your place/watch your place) over spring break?

   Answers: 1) very worried to 4) not at all worried.

2. How likely would it be that you'd ask this person to (come over to your place and work on the class project/watch your place) over spring break?

   Answers: 1) very unlikely to 4) very likely.

3. How fearful would you be about having this person (come over to your place over spring break without your roommates around/watch your place during spring break)?

   Answers: 1) very fearful to 4) not at all fearful.

4. How reliable would you say this person is when it comes to (working together on a class project/ watching your place during spring break)?

   Answers: 1) very unreliable to 4) very reliable.

5. The benefits of having this person come (over to your place/watch your place) over spring break outweigh the potential costs.

   Answers: 1) strongly disagree to 4) strongly agree.

Additional questions after newsletter

1. To what extent do think your classmate has changed?

Answer: scale from 1 to 10.

2. Do you think your classmate has overcome his addiction?

   Answers: a) yes, b) no, and c) don't know.

3. Do you think the new information changed your perception about your classmate´s character/habits?

   Answers: a) yes, b) no, c) don't know.

Attention Checks

1. If x=5, y = 2, and z = 1, then the value of (x+z)/y is:

   a. 11

   b. 10

   c. 4

   d. 3

   e. 1

2. In the survey, you read about a class project that was due:

   a. After summer break.

   b. After spring break.

   c. After winter break.

   d. Before winter break.

Vignette for social support experiment

You recently spent time with [a friend from your childhood (Control Condition) or your cousin (Experimental Condition)] who told you that he's going through a rough patch in his life. You and your (friend or cousin) haven't been close in recent years, but you have good memories of spending time together as kids. [However, you also know that he has struggled with substance abuse and

was in rehabilitation. (Experimental Condition)]. He asks if you'd help him get out of this rough patch.

Survey Questions for Social Support Experiment

1. In a scale of 1 to 5, how likely would you be to:

    a. Loan him money?

    b. Help him find a job?

    c. Help him find a place to live?

    d. Introduce him to your friends?

    e. Give him advice"?

    f. Counsel him about his life goals?

    g. Tell him about opportunities, like someone who is looking for a roommate?

    h. Provide him with information about available social services, like job training?

    i. Provide him with a listening ear?

    j. Give him a hug?

    k. Take him to do something fun?

    l. Set your feelings aside when talking to him, even if he frustrates you?

Attention Check

1. The vignette said that you had good memories about:

    a) playing in a football team.

    b) spending time together as kids.

    c) attending courses at school.

Chapter 3. "Exploring the Impact of Substance Abuse Histories on Cooperation, Trust, and Expected Reciprocity. Mediating Effects of Warmth and Competence in a Trust Game".

Abstract

This study examines the influence of substance abuse histories on trust and cooperation in a trust game. Participants engaged in the trust game with hypothetical partners who had diverse substance abuse backgrounds. They were then provided with supplementary information about their partners, highlighting either their academic achievements or community service leadership. Participants had the ability to adjust their money allocation, expected reciprocity, and trust in the receiver based on this additional knowledge. The findings reveal that awareness of a partner's substance abuse history significantly impacted participants' expectations of reciprocity, leading to lower expectations among those who knew about their partner's addiction or rehabilitation histories.

Interventions emphasizing academic recognition and public service leadership positively influenced trust perceptions and the perceived trustworthiness of the partners. Perceived warmth emerged as a critical mediator in these relationships, underscoring its pivotal role in facilitating positive social outcomes. These findings have implications for developing interventions aimed at reducing stigma, promoting trust, fostering cooperation, and enhancing social interactions for individuals with substance abuse histories. By emphasizing positive attributes, such as academic accomplishments and community service leadership, these interventions can change attitudes, combat stigma, and create a more supportive and inclusive environment for individuals grappling with addiction. Overall, this research contributes valuable insights to the field, advancing our understanding of trust dynamics and cooperation towards individuals with diverse substance abuse histories.

Introduction

Substance abuse is a challenging condition that affects individuals and communities worldwide. Not only does it pose significant health risks, but it also carries a heavy burden of stigma and negative societal perceptions (Adams et al., 2021; Corrigan et al., 2009; Kilian et al., 2021; Muncan et al., 2020; Sciences, 2016; Semple et al., 2005). Anecdotal evidence and qualitative studies offer valuable insights into this complex issue. They reveal that stigma surrounding substance abuse leads to social exclusion, discrimination, and limited employment opportunities for individuals with a history of substance abuse (Christie, 2021; van Olphen et al., 2009). Moreover, this stigma has broader implications, affecting social interactions and reducing solidarity and cooperation in various social contexts. Understanding the dynamics of cooperation and trust towards individuals who have a history of substance abuse is essential for developing effective interventions aimed at reducing stigma and promote positive social interactions.

This manuscript explores the intricate dynamics of trust and cooperation concerning individuals with substance abuse histories. It examines how portraying these individuals in a more positive light influences participants' perceptions and financial decisions in a trust game. Additionally, the study explores the mediating roles of warmth and competence in understanding the relationships between stigma-reducing interventions and trust game outcomes. Through rigorous analysis, this research sheds light on the pivotal role of perceptions and other psychological factors in shaping trust and cooperation towards individuals with substance abuse histories. By investigating these crucial aspects, the study contributes valuable insights into the impact of disclosing addiction histories on perceptions of trustworthiness.

The study employed a modified version of the trust game as its experimental design to examine the influence of substance abuse histories on trust evaluations. The trust game setting was

chosen for its ability to simulate real-life situations, facilitating the observation of participant behaviors when interacting with individuals with substance abuse histories. To ensure unbiased results, participants were randomly assigned into one of three groups: the first group was informed about their partner's substance abuse history, the second group learned about their partner's successful addiction rehabilitation, and the third group, serving as a control, was paired with individuals experiencing sleep difficulties. This rigorous randomization guaranteed that any disparities in trust game outcomes could be confidently attributed to the specific interventions received by each group.

In this experimental setup, participants took part in a simulated trust game alongside their designated partners. Following an initial round, participants were presented with supplementary information regarding their partners. This additional information highlighted either the partners' academic accomplishments or their role in community service leadership. Participants were then given the freedom to modify different elements of their interactions within the trust game. This included the ability to modify the monetary sum sent to their partner, adjust expectations concerning the return of funds, and recalibrate their overall level of trust. By providing participants with this flexibility, the study sought to gain insights into how the information about their partners' achievements shaped participants' subsequent actions, perceptions, and trust-related choices within the trust game.

The study accounted for a range of factors that could potentially influence trust game outcomes. These factors encompassed participants' risk aversion and altruistic tendencies, competitiveness, contentiousness, perceptions of public stigma, self-rated knowledge of addiction's mechanisms, beliefs about addiction and recovery, desire for social distance, prior contact with individuals struggling with addiction, political ideology, political party,

demographics, and location. By considering these variables, the study sought to control for potential confounding factors and provide a more nuanced understanding of the relationship between substance abuse histories, trust game outcomes, and the effects of the information manipulation.

The study revealed a significant association between participants' awareness of their partner's substance abuse history and their expectations of reciprocation within the trust game. Specifically, those who knew about their partner's addiction or rehabilitation histories displayed diminished expectations regarding the return of funds by their partner. Furthermore, participants with a stronger preference for social distance also exhibited reduced expectations of money being returned and lower levels of trust. These outcomes underscore the role of stigma in shaping expectations related to reciprocation and trust. The results shed light on how addiction stigma can hinder the establishment and fostering of trust and cooperation in social interactions.

The study also explored the effects of interventions aimed at reducing stigma. The recognition of academic excellence was found to be associated with higher levels of trust for both the addiction and rehabilitation groups. However, a more substantial influence was observed in individuals undergoing rehabilitation, suggesting that they interpreted this information as a sign of progress in their recovery journey (McGinty et al., 2015). Similarly, leadership in public service activities was significantly related to trust in both groups, indicating that engagement in community-oriented endeavors can contribute to the development of trust and trustworthiness among individuals with a history of substance abuse. Notably, perceived warmth emerged as a significant mediator in the relationship between interventions and trust game outcomes, emphasizing its importance in promoting cooperation towards stigmatized populations (Fiske, 2018).

However, the study's results did not reveal significant mediating effects for competence, which may be attributed to the intricate nature of decision-making within the trust game setting. It appears that participants' financial decisions are not solely determined by their perceptions of the receiver's competence, but rather influenced by a complex interplay of cognitive and emotional factors (Alós-Ferrer & Farolfi, 2019). Notably, participants' preexisting beliefs about the receiver's personality traits and deservingness seemed to overshadow the influence of competence perceptions on their financial behavior. To gain a deeper understanding of how competence perceptions can impact trust outcomes in this population, future research should explore alternative approaches to manipulate and study these perceptions. This could lead to valuable insights that would further enhance our understanding of trust dynamics in interventions for individuals with substance abuse histories.

Furthermore, the analysis revealed that participants' levels of trust in the information presented played a significant role in influencing their financial cooperation within the trust game. Those who harbored skepticism towards the information they received about their partner exhibited a decreased inclination to send money during the game, indicating how the participants' suspicion regarding the information conveyed to them led to a reduced willingness to cooperate. Furthermore, the study found that participants who had prior experiences with individuals who had faced addiction-related challenges were more inclined to perceive their partner's behavior as boasting, exhibiting arrogance, or manifesting competitiveness following the intervention. These perceptions also resulted in a decrease in the amount of money sent to the receiver.

This finding underscores the impact of participants' prior experiences on their interpretations of the receiver's behavior, further influencing their financial decisions in the trust game. These intricate dynamics of trust and cooperation highlight the importance of carefully

considering the participants' backgrounds and prior experiences when designing interventions targeting this population. By recognizing and addressing such factors, interventions can be tailored to be more effective in reducing stigma and promoting trust and cooperation in social interactions involving individuals with substance abuse histories.

In conclusion, this study highlights the detrimental impact of stigma on perceptions of trust and trustworthiness among individuals with a history of substance abuse, while also underscoring the positive effects of interventions that portray them in a positive light. Prioritizing warmth in these interventions can bolster cooperation and trust towards stigmatized groups, leading to more positive social interactions, increased financial contributions, and enhanced trust. These findings offer valuable insights that can significantly contribute to the development of more effective interventions aimed at addressing the challenges faced by this marginalized population in their interactions with others. By challenging addiction stereotypes, these interventions have the potential to promote better social interactions and improved access to social capital for individuals with a history of substance abuse, creating a more inclusive and supportive social environment and facilitating their successful reintegration into society.

This paper is structured as follows. The background section offers an overview of previous studies that have utilized the trust game to explore trust and trustworthiness. The study design section outlines the methodology employed, including the administration of a survey experiment through the Connect platform, the random assignment of participants to different levels of information regarding their partners' substance abuse histories and the description of the modified version of the trust game that was used in this study. The sample characteristics section presents key demographic information about the participants who took part in the study, offering key insights into the composition of the sample. The model equation describes the specific

characteristics of the regressions utilized in the analysis. The results section presents the findings

obtained from the regression analysis, with a particular focus on examining the impact of various

factors on trust game outcomes. Finally, the discussion section interprets the results derived from

the model, offering insights into the implications of the findings, and providing policy

recommendations to inform the development of more effective interventions to support individuals

with a history of substance abuse.

Background

Trust serves as a fundamental pillar of human interactions, playing a crucial role in the

establishment and sustenance of relationships and cooperation (Holm & Nystedt, 2008; Johnson

& Mislin, 2011; Mayer et al, 1995; Sapienza et al., 2013a). Scholars from various disciplines have

contributed diverse perspectives on trust, each offering valuable insights into the complex nature

of this fundamental concept. Mayer et al. (1995) propose a definition that highlights the emotional

and psychological aspects of trust, emphasizing the willingness of individuals to make themselves

vulnerable by placing confidence in others. According to Mayer et al. (1995), trust involves the

willingness to place oneself in a vulnerable position with the expectation that the other party will

act in a manner that aligns with the interests and values of the person placing trust (p. 712).

On the other hand, (Gambetta, 2000) offers an alternative definition, portraying trust as a

belief in the probability that someone will perform a beneficial action. Specifically, "When we say

we trust someone or that someone is trustworthy, we implicitly mean that the probability that he

will perform an action that is beneficial or at least not detrimental to us is high enough for us to

consider engaging in some form of cooperation with him" (Gambetta, 2000, p. 216). This

definition of trust as a probability-based belief introduces a rational dimension to the decision-

making process. People assess the person's past behavior, actions, and intentions to gauge the likelihood of positive outcomes, allowing them to calculate potential risks and rewards associated with cooperative behavior.

Both definitions offered by Mayer et al. (1995) and Gambetta (2000) emphasize distinct aspects of trust, illuminating the cognitive and emotional aspects that shape trust-related decisions. Mayer et al.'s definition underscores the vulnerability inherent in trust, as individuals must place their confidence in others, potentially exposing themselves to the risk of exploitation. On the other hand, Gambetta's definition introduces a rational perspective, viewing trust as a calculated belief in the likelihood of beneficial actions by others. This probability-based understanding allows individuals to assess the potential gains and losses of cooperative endeavors in trust-based interactions. Notably, this perspective becomes particularly relevant during initial interactions, where the calculus of trust can be influenced by the process of social categorization and stereotypes.

When deciding whether to trust unfamiliar individuals, people often rely on two strategies: categorization based on inferred group membership or a focus on individual characteristics and specific information. Categorization involves grouping individuals into social categories or stereotypes based on shared characteristics, such as race, gender, age, or occupation (Cañadas et al., 2015; Fiske, 2018). These categories serve as mental shortcuts that help individuals make quick judgments and predictions regarding others' behavior. During initial interactions, this process of social categorization can hold substantial influence over the calculation's individuals engage in when determining whether to extend their trust. In contrast, the alternative approach involves

focusing on individual attributes and the information available in the present interaction.[13] This method allows for a more nuanced and individualized evaluation of trustworthiness, considering the unique qualities and actions of the person at hand. Each of these strategies possesses its own advantages and drawbacks. Social categorization, for instance, offers the benefit of enabling swift decision-making. This can prove advantageous in specific scenarios where the need for quick judgments arises due to concerns related to safety or the optimization of efficiency.

However, relying on stereotypes and the process of social categorization can give rise to biases and preconceived notions about individuals or groups, significantly influencing trust evaluations and subsequent behaviors (Fiske, 2018).[14] Stereotypes function as cognitive frameworks that facilitate the formation of generalizations about a particular group based on shared characteristics. As individuals categorize others based on predetermined group associations, they may inadvertently form quick judgments that overlook individual uniqueness and context (Lawrence, 2004). The inclination to generalize based on group identity can lead to assessments that are not only unjust but also inaccurate, as they fail to recognize the nuanced individual variations that exist within any given group. This tendency to draw conclusions based on group affiliation perpetuates a cycle of bias and can hinder the fair evaluation of individuals' capabilities.

Furthermore, a consistent body of research underscores the significant influence that stereotypes wield over the formation and maintenance of trust in social interactions (Fiske, 2018; Lloyd, 2013; Overton et al., 2021; Richey & Ikeda, 2009). These mental shortcuts play a pivotal role in shaping initial impressions. Firstly, stereotypes give rise to preconceived expectations about

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[13] Rather than relying solely on preconceived notions based on group affiliations, individuals assess the person's character, reliability, and credibility based on observable behaviors, communication patterns, and specific contextual cues.

[14] Trustworthiness evaluations often occur unconsciously (Leung & Wincenciak, 2019) and can be influenced by preconceived notions or biases about certain groups, leading to unfair assessments solely based on group membership.

individuals based on their perceived group membership, prompting a heightened reliance on categorization strategies during trust appraisal (Leung & Wincenciak, 2019). This bias shape how individuals assume certain traits or behaviors in people based on their group affiliation, fundamentally influencing their attitudes and expectations towards them. Secondly, stereotypes influence the processing and interpretation of information about others. When activated, stereotypes tend to prioritize data that aligns with established beliefs, often leading to the oversight or dismissal of contradictory information. This skewed information processing significantly influences cognitive strategies and, consequently, molds initial trust judgments.

Thirdly, stereotypes give rise to attributional biases, wherein individuals attribute the behavior or characteristics of others primarily to their perceived group membership, rather than considering individual factors (Franke et al., 2019; Hatzakis, 2009). This results in interactions between individuals facing addiction and their peers may be tainted by skepticism, hesitancy, and unwarranted suspicion, hindering the formation of genuine connections. Within the context of interactions between individuals confronting addiction and their peers, this phenomenon can have profound implications. When individuals facing addiction are subjected to attributional biases driven by stereotypes, their actions and intentions may be unfairly linked to their substance use history rather than being appraised objectively based on personal circumstances or current choices. Consequently, interactions between these individuals and their peers may be marred by an undercurrent of skepticism, hesitancy, and unwarranted suspicion. To address these negative consequences, a deeper understanding of the nature of stereotypes becomes essential.

The Stereotype Content Model (SCM) is a theoretical framework developed to understand the nature and consequences of stereotypes (Fiske, 2018). The model proposes that stereotypes can be characterized by two dimensions: warmth and competence. Warmth refers to the extent to which

a group is perceived as having positive or negative intentions, while competence refers to the extent to which a group is perceived as being capable or incompetent. According to the SCM, different groups can be characterized by different levels of warmth and competence. For example, groups that are high in warmth and competence, such as Asians, are often seen as model minorities, while groups that are low in warmth and competence, such as the homeless, are often stigmatized and marginalized.

Research has found that the SCM is a useful tool for understanding the nature of stereotypes and the consequences of these stereotypes on social interaction. For example, studies have found that individuals who hold stereotypes about a group that is high in warmth and competence are more likely to trust and interact with members of that group than individuals who hold stereotypes about a group that is low in warmth and competence (Fiske, 2018). Additionally, the SCM has been applied to understand the impact of stereotypes on different domains such as education and employment. Studies have found that individuals who hold negative stereotypes about a group may be more likely to stereotype them in performance evaluations and less likely to hire them (Fiske, 2018).

Consistent with these findings, numerous studies have consistently emphasized the detrimental consequences of stereotypes on attitudes towards stigmatized groups (Leung & Wincenciak, 2019; Sciences, 2016; Vilsaint et al., 2020a). For instance, individuals grappling with addiction frequently confront prejudiced perceptions, finding themselves labeled as morally frail, devoid of self-control, and undependable (Crisp et al., 2005; Livingston et al., 2012; Rao et al., 2009). The repercussions of these biases extend far beyond mere reputation; they perpetuate misunderstandings, obstruct effective communication, and erect barriers to the cultivation of harmonious relationships. Considering the relevance of stereotypes in influencing social

interactions, it becomes apparent that the disclosure of addiction and rehabilitation information holds the potential to trigger pre-existing stereotypes about drug addicts.

Understanding how disclosing substance abuse histories influences trust evaluations is a crucial step in the development of effective strategies aimed at supporting the comprehensive recovery and societal reintegration of these individuals. The theoretical frameworks proposed by Mayer et al. (1995) and the Stereotype Content Model (Fiske, 2018) offer insightful lenses through which to examine the complexities of trust judgments and the potential for bias against those with a drug addiction history. These frameworks lay the foundation for targeted interventions that can address specific components of trust assessment and work toward diminishing discrimination against individuals navigating addiction challenges or embarking on their journey of recovery.

Hypotheses Framework

Based on the findings from the literature review emphasizing the significance of trust in social interactions and the role of stereotypes in shaping trust formation, the present study analyzes how disclosing addiction and rehabilitation histories influence trust evaluations and subsequent behavioral responses, with a specific focus on understanding how stereotypes affect perceptions of reliability and trustworthiness towards individuals with such histories. Additionally, the study aims to explore the potential of using counter-stereotypical information about individuals with rehabilitation histories to improve trust judgments. By analyzing the effects of such information on biases and perceptions, the study aims to identify interventions that can neutralize biases and promote perceptions of reliability and trustworthiness towards this population.

However, accomplishing this requires an initial step of recognizing biases that people hold towards individuals grappling with addiction challenges. Drug addicts often face the stigma of

being perceived as morally weak, lacking self-control, and untrustworthy, as noted by (Crisp et al., 2005; Livingston et al., 2012; Rao et al., 2009). These stereotypes not only contribute to reputational damage but also shape how society views, interacts with, and places trust in individuals struggling with addiction. Building upon this knowledge, the first hypothesis of the study suggests that participants who are informed about their partner's struggle with addiction will have lower expectations of reciprocity and exhibit lower initial levels of trust compared to participants in the control group.

Hypothesis 1: Participants who are informed that their partner struggle with addiction will have lower expectations of reciprocity and exhibit lower initial levels of trust compared to participants in the control group.

Addiction can significantly impair an individual's decision-making ability, compromising their judgment and reliability. This impairment in cognitive functioning greatly diminishes their capacity to exhibit trustworthy behavior. Consequently, individuals who possess a comprehensive understanding of the underlying brain mechanisms of addiction may approach interactions with these individuals with increased caution. They may perceive a heightened risk of being betrayed due to the perceived lack of self-control in the person struggling with addiction. As a result, these individuals may harbor doubts about the dependability of their partners and adopt a more skeptical attitude towards them. Expanding on this existing knowledge, the second hypothesis of the study proposes the following:

Hypothesis 2: Participants who possess a better understanding of the underlying brain mechanisms of addiction will tend to contribute less money, hold lower expectations of reciprocity, and exhibit reduced trust towards individuals with a history of substance abuse.

The desire for social distance can significantly influence trust in interpersonal interactions. Social distance refers to the psychological or emotional space that individuals prefer to keep between themselves and others (Franke et al., 2019; Jorm & Oh, 2009). This concept reflects the level of comfort individuals feel in forming close relationships or engaging in intimate social interactions. When individuals have a stronger inclination for social distance, they tend to exhibit more cautious and reserved behavior in their interactions with others (Franke et al., 2019). This inclination can stem from various factors, such as past negative experiences, fear of vulnerability, or a general wariness of others' intentions (Jorm & Oh, 2009). Consequently, individuals with a higher desire for social distance will approach trust-based situations with skepticism and a reduced willingness to take risks. Based on this, the third hypothesis of the study suggest that:

Hypothesis 3: Participants with a stronger inclination for social distance are expected to contribute less money, hold lower expectations of reciprocity, and exhibit reduced trust, in comparison to participants with a lesser desire for social distance.

Likewise, individuals who achieve elevated scores on the Public Stigma Index—an assessment measuring perceived stigma towards those grappling with addiction—are anticipated to exhibit comparable behaviors. Elevated scores on this index signify a heightened assimilation of societal stigma, thereby shaping participants' viewpoints. Consequently, individuals with higher stigma scores are expected to contribute less money, hold lower expectations of reciprocity, and exhibit reduced trust, in contrast to participants with lower perception of stigma and an inclination towards maintaining social distance.

Hypothesis 4: Participants who score higher on the Public Stigma Index are expected to contribute less money, hold lower expectations of reciprocity, and exhibit reduced trust, in comparison to participants with a lesser perception of stigma and desire for social distance.

Contact theory suggests that participants who have direct exposure or personal experiences with individuals facing addiction develop a deeper understanding of the challenges and difficulties associated with addiction. This increased understanding is believed to foster empathy, leading to a more compassionate and supportive attitude. As a result, participants with prior experiences are hypothesized to demonstrate more generosity by sending more money to the receiver.

Hypothesis 5: Participants who have prior experiences with individuals struggling with addiction will tend to send more money to the receiver.

Perceptions held by the public regarding individuals with substance use disorders often exhibit remarkable persistence and resistance to change (Lloyd, 2013). However, research suggests that altering these entrenched attitudes can be achieved through exposure to counter-stereotypical exemplars (Livingston et al., 2012; Luty et al., 2009; Sciences, 2016). The encounter with individuals who defy prevailing stereotypes can profoundly challenge and reshape our beliefs, leading to a transformative shift in perceptions and fostering more positive attitudes and an increased inclination to trust. Furthermore, the dissemination of narratives that highlight the strengths, resilience, and achievements of individuals who have overcome substance use disorders serves as a powerful tool in challenging negative stereotypes and humanizing the issue.

To investigate the potential of counter stereotypical information for changing perceptions and attitudes, this study designed two interventions to reduce initial distrust towards individuals with a history of substance abuse. Participants will receive additional information about their partner, specifically highlighting their academic achievements or leadership in community service. It is hypothesized that presenting these positive qualities will challenge participants' biases towards individuals with substance abuse histories, neutralizing any initial negative bias, and ultimately leading to increased levels of trust.

Hypothesis 6: Exposing participants to new information that challenges addiction stereotypes will reduce their mistrust toward individuals with substance abuse histories.

Study design

The trust game is a carefully designed experimental setup that recreates trust-based interactions in a controlled environment, offering valuable insights that closely resemble real-life scenarios (Alós-Ferrer & Farolfi, 2019). Participants in this game receive an initial endowment of $10 and are paired anonymously, taking on the roles of either sender or receiver. In the first stage, the sender can decide to pass none or a portion of their $10 endowment (where $0 \leq x \leq 10$) to the receiver. The sender retains $10 - x, and the experimenter triples the remaining amount, which is then given to the receiver. Subsequently, in the second stage, the receiver has the option to pass none, or a portion of the money received (where $0 \leq y \leq 3x$) back to the sender. The amount chosen by the sender signifies trust, demonstrating their readiness to take a risk by transferring resources to the receiver with the anticipation of reciprocation. In contrast, the amount returned by the receiver indicates trustworthiness, reflecting their reliability and willingness to reciprocate the trust placed in them (Sapienza et al., 2013a). This experimental framework provides researchers with a means to study trust dynamics and the factors influencing trusting behaviors in interpersonal interactions, offering valuable insights into human decision-making and social cooperation.

While the traditional Trust Game has served as a foundational tool for understanding trust behavior, recent modifications and extensions have allowed researchers to explore specific dimensions of trust in greater depth. These adaptations include variations in game structure, incorporating risk preferences into the decision-making processes, examining the influence of other-regarding preferences on trust decisions, and analyzing variation on trust behavior across

different groups and locations (Alós-Ferrer & Farolfi, 2019; Brülhart & Usunier, 2012b; Holm & Nystedt, 2008). The most important finding of this research is that trust behavior in the trust game is not solely driven by monetary considerations. Many individuals exhibit trusting behavior motivated by prosocial preferences (Alós-Ferrer & Farolfi, 2019; Brülhart & Usunier, 2012b; Johnson & Mislin, 2011; Tang & Gong, 2023), indicating that their trust extends beyond economic interests.[15] Interestingly, research has shown that participants may display a willingness to send money even when they don't anticipate receiving anything in return from the recipient. This behavior is often referred to as "unconditional kindness" where people engage in acts of generosity and altruism without expecting any personal gain or reciprocation (Cox, 2004).

To get a better understanding of the role of prosocial preferences in trust-related decision-making, researchers have employed alternative methodologies that combine information from dictator games and trust games (Chaudhuri & Gangadharan, 2007; Cox, 2004). By examining the differences within individuals across these two types of games, researchers can disentangle trust from other-regarding preferences and obtain a clearer understanding of how prosocial motivations influence trust-related choices. While this method provides valuable insights, it is not always feasible for researchers to run multiple games due to practical constraints. Consequently, scientists have explored alternative avenues to investigate the impact of prosocial preferences on trust-related decisions. One approach involves manipulating the trustee's financial situation, creating scenarios where some trustees are portrayed as poor while others as rich (Anderson et al., 2006; Calabuig et al., 2016). By examining whether participants send more money to the poor trustee,

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[15] This is important because the game's structure allows altruistic trustors to transfer resources without expecting reciprocation, which could lead to an overestimation of trust levels. Similarly, when evaluating the trustee's transfer as an indication of trustworthiness, it remains unclear whether it solely stems from reciprocation or incorporates other prosocial motivations.

researchers can explore if individuals prioritize equity in their trust decisions. The findings have shown that some individuals transfer money to the trustee to achieve fairness and equality.

Critics of the trust game have also raised concerns about risk aversion. The game's structure lacks the ability to differentiate between different types of risks, which limits its ability to fully capture the complexity of decision-making in trust-related situations (Alós-Ferrer & Farolfi, 2019; Chetty et al., 2021; Houser et al., 2010). Trust inherently involves taking a risk, so it is important to investigate how risk attitudes relate to trust decisions in the trust game. However, previous studies have produced inconsistent findings regarding this relationship. One study conducted by Houser et al., (2010) examined the relationship between trust and risk attitudes using the Trust Game. They found no systematic relation between trust decisions and risk attitudes. However, in a related study by(Fairley et al., 2016), a risky Trust Game was used to estimate risk attitudes and predict behavior in the Trust Game. Participants' decisions in the risky Trust Game were found to be influenced by risk attitudes, whereas a standard measure of risk attitudes (lottery based) did not predict behavior in the Trust Game. This suggests that the risk involved in the Trust Game, which includes both financial and psychological aspects, may differ qualitatively from other risk situations.

To further investigate the role of risk in the Trust Game, Bohnet and Zeckhauser (2004) introduced the concept of "betrayal aversion." They compared participants' behavior in the Trust Game with behavior in equivalent risky situations where the social component was removed. The findings revealed that participants had a higher threshold for trusting in the Trust Game. In other words, they required a higher assurance or minimum acceptable probability to engage in trust compared to other risky situations. This indicates that participants had a stronger aversion to experiencing betrayal in the Trust Game. In contrast, Fetchenhauer and Dunning (2012) found

mixed results. They observed that trust was lower in the risky version of the game compared to the Trust Game. The authors proposed that these differences may be attributed to the methods used to elicit participant´s responses. The Minimum Acceptable Probability (MAP) employed in Bohnet and Zeckhauser's study captures abstract betrayal aversion, but participants may hesitate to openly express distrust within the actual game. These findings emphasize the intricate relationship between trust, risk attitudes, and social decision-making, calling for thoughtful consideration of diverse factors and elicitation methods in trust research.

The effectiveness of the trust game as a measure of trust and trustworthiness has been questioned by some studies (Ashraf et al., 2006; Brülhart & Usunier, 2012a; Sapienza et al., 2013b). These studies found only a weak correlation between the amount of money sent in the trust game and participants' self-reported trust levels, raising concerns about the game's ability to accurately capture individuals' perceptions of trust. To address these critiques, some scholars propose a more targeted approach to assessing trustworthiness. They suggest shifting the focus from the specific amount of money sent to the receiver to the sender's expectations regarding the receiver's probability of reciprocating and returning the money.

This notion of "expected reciprocation" aligns more closely with Gambetta's definition of trust as a probability-based belief. By emphasizing the sender's expectations of the receiver's likelihood to reciprocate, it acknowledges the probabilistic nature of trust and goes beyond the simple exchange of money to delve into the nuanced perceptions and beliefs that underpin trust in social interactions. This approach captures the cognitive evaluation that informs trust decisions, reflecting the sender's belief in the likelihood of the receiver's cooperation. It aligns with the rational dimension of trust, where people consider the available evidence to make informed decisions about whom to trust and engage with in various social and economic exchanges.

The trust game has been extensively studied to explore how trust behavior varies across different demographic groups. A meta-analysis conducted by Olmo R. van den Akker et al. (2020), which focused on gender differences in the trust game and the gift-exchange game, parental investment theory and social role theory were employed to predict that men would exhibit higher levels of trust, while women would be perceived as more trustworthy. The results supported these predictions, demonstrating that men indeed displayed greater trust in the trust game, indicating a propensity for risk-taking and trust in others. However, no significant gender difference in trust levels was found in the gift-exchange game.

Notably, the findings also revealed that men were perceived as more trustworthy in the gift-exchange game, regardless of their own trust behavior. These findings suggest the existence of a potential "male multiplier effect," wherein males are particularly influenced by the opportunity to acquire surplus resources. Furthermore, research exploring the impact of race on trust game outcomes has shown that individuals tend to demonstrate lower levels of trust when interacting with individuals from different racial backgrounds, highlighting the role of implicit biases and societal factors.

In light of these findings, the study developed a modified version of the trust game where participants engaged in a hypothetical trust game with a virtual partner, where they allocated virtual money and responded to a series of questions regarding their attitudes towards their partner. These questions encompassed perceptions of warmth and competence, desire for social distance, previous contact with individuals who have struggled with addiction, attitudes toward addiction, etc. Participants were also informed that their responses to the survey would determine their

eligibility to enter a lottery and potentially win \$5.[16] This incentive was introduced to encourage a thorough and earnest completion of the survey. Moreover, it served to address reservations regarding the reliability of engaging in a hypothetical trust game without a corresponding financial incentive.

Although participants did not have direct interaction with another person, they answered the questions as if they were engaged in a trust game with a partner. Participants were assigned to different treatment groups. Some participants were informed that their partner was struggling with addiction, while others were informed that their partner struggled addiction and underwent rehabilitation to overcome it. The control group was informed that their partner had recently struggled with their sleep. This allowed for a comparison between the effects of substance abuse histories and a non-substance abuse-related challenge.

After being assigned into groups, participants engaged in a round of the trust game with a hypothetical partner and subsequently rated their perceptions of the partner's warmth, competence, and trustworthiness based on this initial interaction. Following this, participants were presented with new information about the partner, focusing on either their academic achievements or their leadership merits in community service. The objective of providing this information was to manipulate the participants' perceptions of their partner's qualities. Participants were given the opportunity to adjust their expectations of the partner's trustworthiness based on the newly acquired information.

They were granted the choice to redistribute the money they sent to the partner, as well as the amount of money they expected in return. Furthermore, participants re-evaluated the warmth and competence of the partner after being exposed to the supplementary information. To assess

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[16] After the survey concluded, one individual was randomly selected and subsequently granted a bonus of \$5, augmenting their compensation.

the impact of the additional information on participants' perceptions, they also responded two additional questions regarding their trust in the received information and how it influenced their perception of the partner. Lastly, participants provided demographic information to help characterize the sample.

Power Analysis

A power analysis was conducted to determine the optimal sample size for the survey experiment. The analysis employed an a priori approach, and it was determined that a sample size of 176 participants would be required to achieve a statistical power of 0.95, an alpha level of 0.05, and a one-tailed test with an effect size of 0.5. Considering the possibility of low-quality responses, an additional 24 participants were intended to be added, resulting in a total of 200 participants. This supplementary buffer of participants was intended to ensure that the final sample size would meet the necessary power requirements and that the collected data would be of high quality and reliability.

Sample Characteristics

Participants were recruited through the platform Connect by Cloud Research and were compensated with $2 for completing the experiment. A total of 200 individuals were invited to participate in the study. However, only 178 individuals actively participated in the survey. One participant did not submit a complete response, resulting in a final sample size of 177. The sample consisted predominantly of 100 males (56%) and 77 females. Regarding race and ethnicity, the largest proportion of the sample was composed of Whites (107 individuals, 60%), followed by Black participants (41 individuals, 23%). Additionally, 29 individuals (16%) identified as

belonging to other minority groups, including Samoan, Guamanian, Hawaiian, Japanese, Korean, Asian Indian, Vietnamese, Filipino, and Chinese completed the survey. In terms of age distribution, 35 individuals (20%) were between 18 and 29 years old, 59 individuals (33%) were between 30 and 44 years old, 66 individuals (37%) were between 45 and 59 years old, and 17 individuals (1%) were 60 years old or over.

Regarding education, participants had varying levels of educational attainment: 2 individuals had less than a high school diploma, 44 individuals had a high school diploma or GED, 24 individuals had an associate's or technical degree, 72 individuals had a bachelor's degree, and 35 individuals had a graduate degree. Participants' yearly family income distribution ranged from less than $10,000 to the highest reported at $99,999, with varying frequencies across income brackets. After completing the initial survey, participants were invited to take a second survey to provide additional data. However, out of the total sample of 177 participants, only 168 individuals took part in the second survey. The data collected from these participants was used to enhance the control variables in the model for the first round of the trust game. The details and results of this extended model, with additional controls, are presented in the Appendix section.

Dependent Variables

The study analyzed three dependent variables, each assessed through distinct measures. Firstly, participants expressed their desired amount of money to be sent to the receiver, on a scale of 1 to 10 dollars. Secondly, expectations of money return by the receiver were evaluated using a five-category scale: 1) "No return," 2) "Half of the money sent," 3) "Same amount as the money

sent," 4) "Double the amount of money sent," and 5) "All receiver's funds." Lastly, participants'

trust in the receiver was measure using a Likert scale from 1 (none) to 5 (a great deal).[17]

Independent variables

The study examined several independent variables, including experimental manipulations

pertaining to the partner's substance abuse histories, participants' perceptions of warmth and

competence, and their desire for social distance.

Experimental manipulations

The study encompassed three distinct conditions: a control group where participants were

informed of the receiver's difficulty with sleeping, and two experimental treatments. In one

treatment, participants were informed that the receiver was grappling with addiction, while the

other treatment conveyed that the receiver had confronted addiction and successfully undergone

rehabilitation. This design allowed for a thorough examination of how varying levels of

information regarding the partner's history of substance abuse influenced participants' perceptions

and attitudes. To demonstrate the effectiveness of the randomization process, the groups´

demographic statistics are presented in Table 12.

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[17] This measurement aimed to capture participants' subjective assessments of the trust they placed in the receiver
during the game.

Table 12. Mean and std. dev. for different variables by groups.

Variables	Addiction (mean)	Rehabilitation (mean)	Control (mean)	Addiction (sd)	Rehabilitation (sd)	Control (sd)
Gender	1.426	1.475	1.404	0.499	0.504	0.495
Income	7.738	7.246	7.316	3.829	3.329	3.621
Education	3.459	3.593	3.544	1.163	1.146	1.001
Pol. Party	1.918	1.814	2.088	0.900	0.880	0.912
Age	43.672	42.153	40.386	12.939	13.352	12.767
Race	1.607	1.576	1.579	1.021	0.770	0.755

Table 12 presents the means and standard deviations for different variables within each group. The variables include gender, income, education, political party affiliation, age, and race. Across all variables, the mean and standard deviation values are similar among the different groups. This indicates that the randomization process was successful in creating balanced groups, ensuring that any observed differences can be attributed to the experimental conditions rather than pre-existing group disparities.

After the completion of the first round of the experiment, two interventions were introduced to the participants. All participants, regardless of their assigned condition, were provided with supplementary information about their partner. This information highlighted either the partner's academic achievements or their leadership in community service. The purpose of these interventions was to examine the impact of the additional information on participants' perceptions and attitudes, in addition to the initial experimental conditions.

Other predictors

To measure participants' perceptions of warmth and competence, the study utilized measures derived from the Stereotype Content Model (Fiske, 2018). A rating scale ranging from 1 (none at all) to 5 (a great deal) was employed. Warmth was assessed through items that measured the receiver's tolerance, warmth, good-naturedness, and sincerity. Competence, on the other hand, was evaluated using items pertaining to the receiver's competence, confidence, independence, competitiveness, and intelligence (Overton et al., 2021). To ensure the survey items' reliability, Cronbach's alpha was calculated to assess internal consistency (George & Mallery, 2003). The results of this analysis are summarized in Table 13, which shows the reliability of the measures used to assess warmth and competence both before and after participants were exposed to the new information about their partner.

Table 13. Cronbach alpha tests for warmth and competence before and after the intervention.

Survey items	α	No. of items
Warmth Index (pre - intervention)	0.891	4
Warmth Index (post - intervention)	0.916	4
Competence Index (pre- intervention)	0.783	5
Competence Index (post intervention)	0.850	5

The reliability of the constructs was assessed using Cronbach's alpha, and the obtained scores for both warmth and competence exceeded the recommended threshold of 0.7 (George & Mallery, 2003), indicating acceptable reliability. To create an index for each construct, the average of all survey items associated with that construct was calculated. This index serves as a proxy measure for participants' perceptions of warmth and competence. Utilizing this proxy measure enables us to confidently analyze the changes in participants' perceptions before and after the

interventions. By comparing the average scores before and after the intervention, we can assess the influence of the intervention on participants' perceptions of warmth and competence.

In addition to assessing participants' perceptions of warmth and competence, the study also examined their desire for social distance and perceptions of public stigma towards drug addicts. Participants were asked to rate their level of comfort on a scale of 1 to 5 in various scenarios involving "the receiver," such as attending a social event together, working on a project together, traveling together, sharing a living space together, and participating in a recreational activity together (Overton et al., 2021). This rating scale aimed to capture participants' subjective assessments of their comfort levels in each situation, and the study ensured the internal consistency of the construct through a Cronbach's alpha test.

Table 14. Cronbach alpha tests for social distance and public stigma.

Survey items	α	No. of items
Social Distance	0.882	5
Public Stigma	0.853	5

Furthermore, the study explored public stigma by requesting participants to rate their level of agreement with a series of statements on a 5-point scale, ranging from 1 (strong disagreement) to 5 (strong agreement). These statements addressed beliefs and attitudes towards drug addicts, including their perceptions of reliability, discomfort, societal burden, likelihood of engaging in criminal behavior, employability, and recovery capabilities. The survey items underwent a Cronbach's alpha test to ensure their reliability in capturing participants' attitudes and beliefs related to public stigma. The results of the reliability test can be found in Table 14.

The variable "Previous Contact" measures whether participants´ had personal experiences with individuals struggling with substance abuse. Participants were asked if they knew a family

member, friend, or coworker who faced substance abuse challenges, and if they answered positively to any of these options, the variable was coded as 1. This variable aimed to capture the influence of participants' prior exposure to addiction-related experiences on their responses. The variable "Help Addict" assessed whether participants would be likely to help a drug addict and was also measured on a 5-point Likert scale. In addition to "Addiction Mechanisms" and "Help Addict," the study also considered several other control variables. These included the participant's altruistic tendencies, competitiveness, contentiousness, and risk aversion tendencies. It's important to note that the second survey, which collected data on these variables, received responses from only 169 participants, indicating a slight reduction in the sample size for these specific analyses. While this reduction in sample size should be considered, the inclusion of these control variables allows for a more comprehensive understanding of the factors influencing participants' responses and helps to strengthen the overall validity of the study's findings.

Controls

The study implemented various control variables, namely conservatism, age, income, education, gender, political party, and location, in order to minimize the impact of confounding factors on participants' responses. The inclusion of these control variables aimed to account for specific aspects that could potentially influence participants' attitudes and behaviors. Controlling for participants' conservatism helped address ideological biases, while age accounted for differences in perspectives and behaviors associated with different age groups. By considering yearly family income, the study captured participants' economic status, while education served as a control variable to mitigate the potential influence of educational backgrounds and knowledge levels. The inclusion of gender as a control variable helped control for the effects of gender on

83

responses. Political party affiliation was considered to account for participants' political preferences, and location served as a control variable to capture regional variations in experiences and attitudes arising from differences in local norms and cultural factors. By incorporating these control variables, the study aimed to isolate the effects of the independent variables and enhance the reliability of the findings.

Model Equation

The OLS regressions for the 1st round of the trust game can be written as follows:

$$Y_i = \beta_0 + Z'\gamma\_i + \beta_2 X2\_i + \beta_3 X3\_i + V'\delta\_i + \varepsilon_i$$

In this model,

Y_i represents the dependent variable (money sent, money returned, trust) for individual i.

B_0 represents the intercept term, capturing the baseline effect on the dependent variable.

Z' is a vector that represents the group to which the individual belongs (e.g., Addict, Rehab, Control).

X_{2_i} represents the participants' score in social distance index.

X_{3_i} represents the participants' score in public stigma index.

V' represents the control variables that account for participants' conservatism, age, income, education, gender, political party, and location.

ε_i represents the residual term, capturing the unobserved factors that affect the dependent variable but are not accounted for by the model.

Results (Trust game initial round)
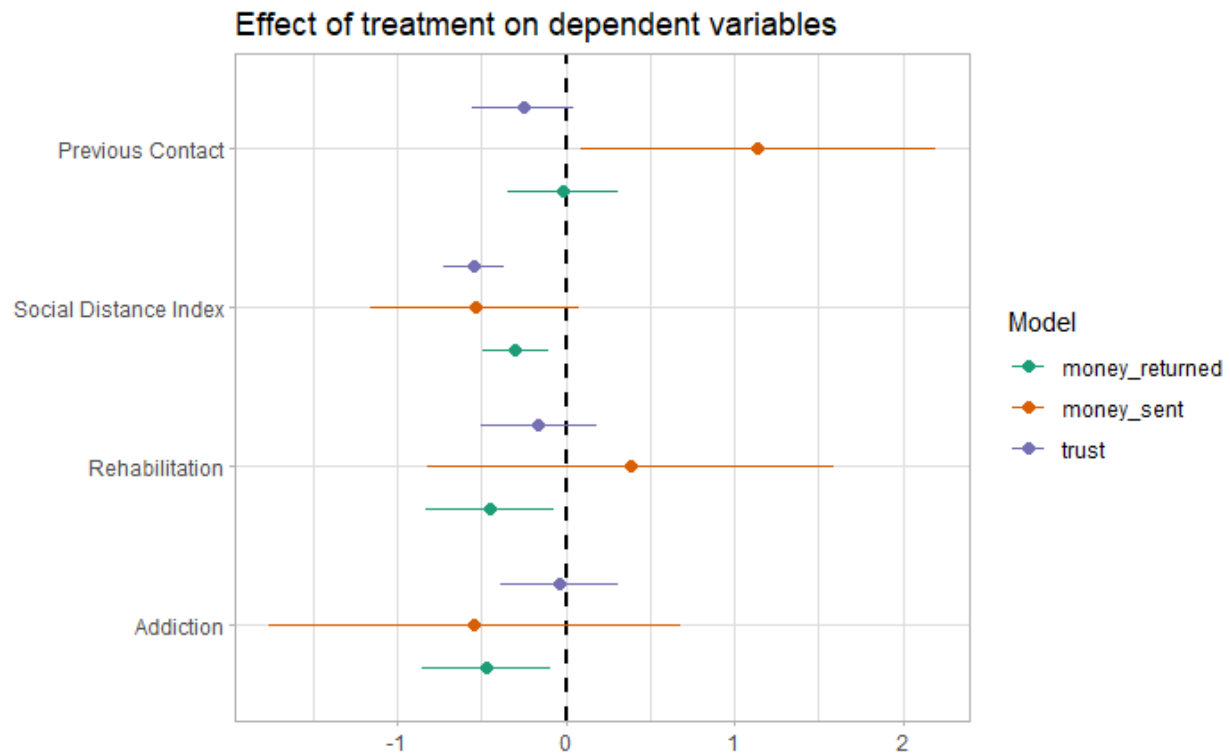
Figure 7. Coefficient plot of OLS regression for 1st round of the trust game.

The regression analysis, as presented in Table 15 in Appendix 2A, presents the outcomes of models with three distinct dependent variables: "Money Sent," "Expected Return," and "Trust" prior to the intervention (supplementary information). The independent variables included the treatment groups (Addiction and Rehabilitation), the participants' familiarity with individuals who have struggled with substance abuse (Previous Contact), participants' desire for social distance, and participants' perceptions of public stigma. Control variables, including participants' conservatism, political affiliation, gender, age, income, education, and geographic location, were also incorporated.

The analysis revealed diverse effects and levels of significance among the variables on the dependent variables. Specifically, the variable 'Addiction' exhibited a statistically significant

negative impact, at a significance level of 0.05, on the expected money returned by the receiver. Participants who were informed that their partner was struggling with addiction anticipated a lower amount of money being returned, with an average reduction of 0.471 points. However, 'Addiction' did not have a significant effect on the amount of money sent by the sender or on the sender's trust towards the receiver. Similarly, the variable 'Rehabilitation' demonstrated a statistically significant negative impact, at a significance level of 0.05, on the expected money returned by the receiver. Participants who were informed that their partner was struggling with addiction and had undergone rehabilitation anticipated a lower amount of money being returned, with an average reduction of 0.450 points. 'Rehabilitation' did not have a significant effect on the amount of money sent or the sender's trust.

The participants' desire for social distance showed statistically significant associations with the expected money returned and trust. An increase of one point in the social distance index resulted in a reduction of 0.296 points in the expected money returned by the receiver and a decrease of 0.545 points in trust. This variable had marginal significance with money sent, indicated by a negative coefficient. The variable "Previous Contact" had a significant positive effect, at a significance level of 0.05, on the money sent by the sender. Participants who reported knowing someone (friend, family, or coworker) who struggled with substance abuse tended to send $1.139 more to the receiver. However, this variable did not show a significant effect on the expected amount of money returned by the receiver or on the sender's trust towards the receiver. Most control variables were not statistically significant, except for conservatism, which had marginal significance and reduced expected return.

The findings from the study underscore the significant roles that substance abuse histories and the desire for social distance play in shaping participants' expectations of reciprocation and

trust. Specifically, participants who are aware of their partner's substance abuse history, whether it involves addiction or rehabilitation, tend to hold lower expectations regarding the money being returned by the receiver. Likewise, the desire for social distance is linked to reduced expectations of money being returned and lower levels of trust. Conversely, the results reveal that participants who have had previous contact with individuals who struggled with substance abuse tend to be more generous in sending money to the receiver. This suggests that personal experiences and familiarity with substance abuse can influence participants' financial behaviors and their willingness to cooperate.

In addition to the primary model, we conducted a supplementary analysis to explore the influence of additional factors on trust, money allocations, and expectations of reciprocation in the context of substance abuse. This extended model considered various psychological and behavioral aspects that might affect participants' responses. The results of these expanded models are presented in Table 16 in Appendix 2A.
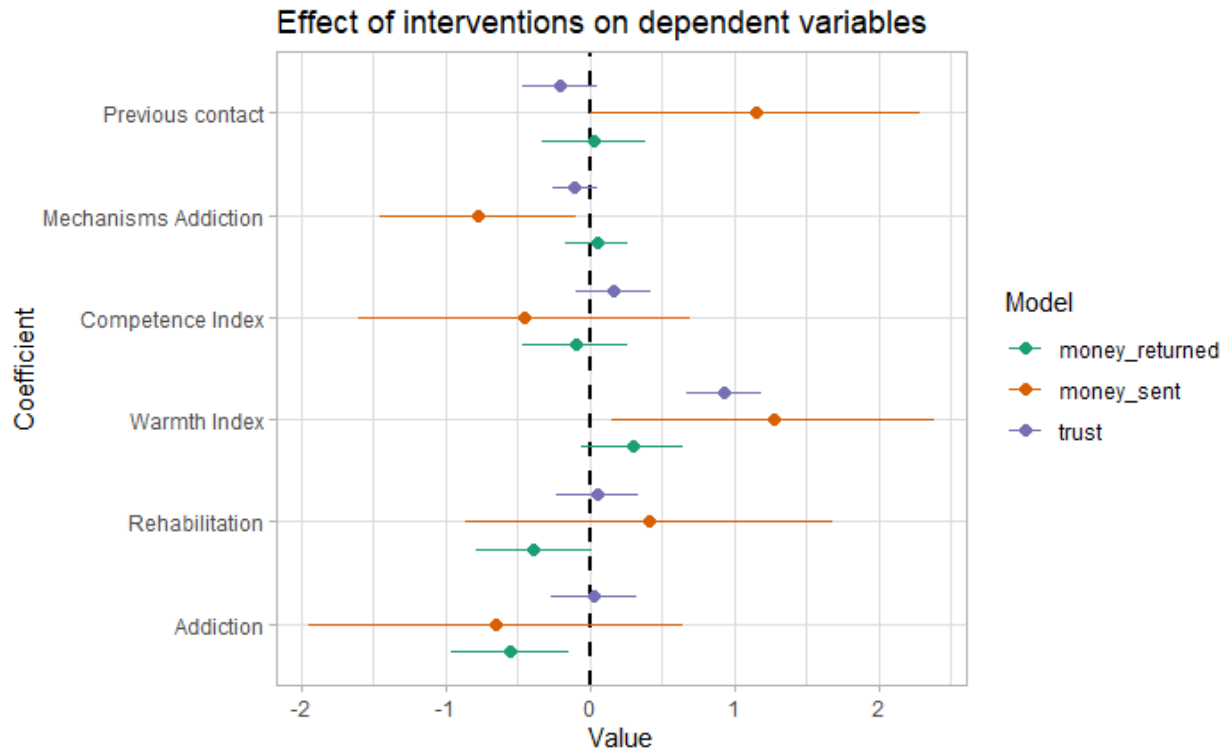
Figure 8. Regression results for models with additional controls.

According to the model, participants assigned to the addiction group showed a significant decrease in their expectation of money being returned by 0.551 points at a significance level of 0.01. This finding indicates that individuals struggling with addiction were perceived as less likely to reciprocate, leading to reduced trust in this context. On the other hand, those assigned to the rehabilitation group also demonstrated a decline in their expectation of money being returned, though the effect was slightly smaller at 0.390 points. Although this reduction did not reach statistical significance at the conventional 0.05 level, it is still noteworthy as it indicates potential differences in perceptions between the two groups. One possible explanation for these results could be that participants recognize that individuals in rehabilitation are actively making efforts to improve their lives, and this perceived effort could mitigate the negative stereotypes associated with the rehab variable. On the other hand, the heightened effect of the addiction variable when

controlling for perceived warmth suggests that participants may harbor stronger negative biases towards individuals identified as addicts. To gain a deeper understanding of the underlying reasons for these biases, more research is necessary to explore potential factors contributing to their persistence.

The study also examined the impact of participants' self-rated knowledge of addiction mechanisms on their money allocations.[18] The results revealed a notable finding: on average, for every one-point increase in participants' self-rated knowledge of the physiological mechanisms involved in addiction, they reduced the amount of money they sent to the receiver by 0.773 dollars. This suggests that possessing more knowledge about addiction mechanisms led participants to adopt a cautious approach when providing financial support, possibly due to doubts about addicts' self-control and resist impulsive behaviors, leading to a decreased willingness to cooperate in them in the trust game. Moreover, participants who felt they had a better grasp of addiction mechanisms may have become more aware of the obstacles for overcoming addiction. This heightened awareness could lead them to approach their financial support with prudence, aiming to offer help without enabling harmful behaviors or fearing the misuse of their support.

In addition, the study explored the influence of perceived warmth on the money sent to the receiver in the trust game. The results revealed a significant relationship, where a one-point increase in the warmth index led to a notable increase of $1.27 in the money sent, with a significance level of 0.05. This finding indicates that when participants perceived the receiver as warmer, they were more inclined to offer financial assistance. Furthermore, perceived warmth was found to play a significant role in fostering trust. With each one-point increase in the perceived

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[18] A breakdown of the trust game outcomes per group and participants' knowledge of addiction mechanisms is presented in Table 17 in Appendix 2A. This table provides a detailed view of how trust game behavior varies among different groups based on their level of self-rated knowledge of addiction mechanisms.

warmth index, there was an expected increase of 0.930 points in trust, significant at the 0.01 level. This highlights the importance of warmth perceptions in establishing and maintaining trusting relationships and cooperation, particularly in the context of substance abuse.

On the other hand, the analysis did not find statistical significance for perceived competence across all models. However, the variable "Previous Contact" had a significant positive association, at a significance level of 0.05, on the money sent by the sender. Participants who reported knowing someone (friend, family, or coworker) who struggled with substance abuse tended to send $1.149 more to the receiver. Nevertheless, this variable did not show a significant effect on the expected amount of money returned by the receiver or on the sender's trust towards the receiver. These findings suggest that participants who have previous contact with individuals struggling with substance abuse may be more inclined to offer increased financial support. However, this increased support does not necessarily impact their expectations or trust levels towards the receivers. In other words, knowing someone who has experienced substance abuse seems to influence participants to provide greater financial assistance without significantly altering their perceptions of the receivers' reliability or the level of trust they place in them.

Overall, the supplementary analysis provided valuable insights into the complex web of factors influencing trust, money allocations, and expectations of reciprocation in the context of substance abuse. The inclusion of multiple psychological and behavioral variables shed light on the intricate interplay between individual knowledge and financial decisions, supporting and expanding on the previous findings from the primary model. These findings contribute to a deeper understanding of the trust dynamics surrounding substance abuse, ultimately paving the way for more targeted interventions and policies in this domain.

Results (trust game outcomes after interventions)

The study used a difference-in-differences (diff-in-diff) design to investigate the effectiveness of two interventions in reducing stigmatization towards individuals with substance abuse histories. First, participants took part in a trust game with their partner. Following this, participants were provided with additional information about their partner. This information highlighted either the partner's academic achievements or their community service leadership. The aim of this information was to change participants' perceptions of their partner and influence their subsequent decision-making in the trust game. Participants had the opportunity to adjust their interactions based on the newly acquired information. They could modify the amount of money they sent to their partner, their expectations of money being returned, their level of trust towards their partner, and their perceptions of their partner's warmth and competence. By comparing changes in attitudes and behaviors before and after the interventions within groups, the study aimed to isolate the effects of the interventions from participant's characteristics.

To address potential confounding factors, additional control variables were included in the analysis. One of these control variables considered participants' perceptions of the receiver appearing arrogant or competitive after receiving the supplementary information. This perception could lead to a reduced sense of warmth towards the receiver or result in participants applying a penalty by sending less money. Another control variable captured participants' skepticism or lack of trust in the information received about the receiver. These control variables were considered to account for the influence of these factors on the outcomes, thereby enhancing the study's ability to isolate and understand the true effects of the interventions in reducing stigmatization towards individuals with substance abuse histories.

Model equation for models with fixed effects

The regression model used to analyze the effects of the interventions on participants' decision-making processes can be represented as follows:

$$Y_{it} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3(X_1 * X_2) + \beta_4 X_3 + \beta_5 X_4 + \gamma\_i + \delta\_t + \varepsilon_i$$

In this model,

Y_i represents the dependent variables (money sent, expected return, and trust) for individual i in period t.

X_1 denotes the group to which the individual belongs, with three possible categories: the addict group, the rehabilitation group, or the control group.

X_2 represents the period after receiving the new information, taking the value 1 if it is the post-intervention period and 0 otherwise.

$X_1 * X_2$ captures the interaction between the group and the two types of interventions (academic or public service), enabling us to examine how the effects of the interventions differ across the various groups.

X_3 account for participant's level of distrust towards the information provided about the receiver.

X_4 indicates whether the participant interpreted the supplementary information provided about the receiver as arrogance or competitiveness.

β_0 represents the intercept term, capturing the baseline effect on the dependent variables.

γ_i and δ_t are individual and time fixed effects, respectively, which control for individual-specific characteristics and period-specific factors that may influence the outcomes.

ε_i represents the residual term, capturing the unobserved factors that affect the dependent variables but are not accounted for by the model.

By specifying this regression model, the study aims to examine the unique effects of the interventions (type of supplementary information) while controlling for other relevant factors and potential sources of bias. By incorporating individual and time fixed effects and additional control variables, the analysis aims to enhance the reliability and validity of the estimated effects, offering a rigorous examination of how the interventions influence participants' decision-making processes within the trust game.

Results per type of intervention and group

The results of the fixed effects regressions are presented using three models, each assessing the effects of the interventions on three dependent variables: "money sent (cooperation)", "money returned" (reciprocation), and "trust". Results are presented below.
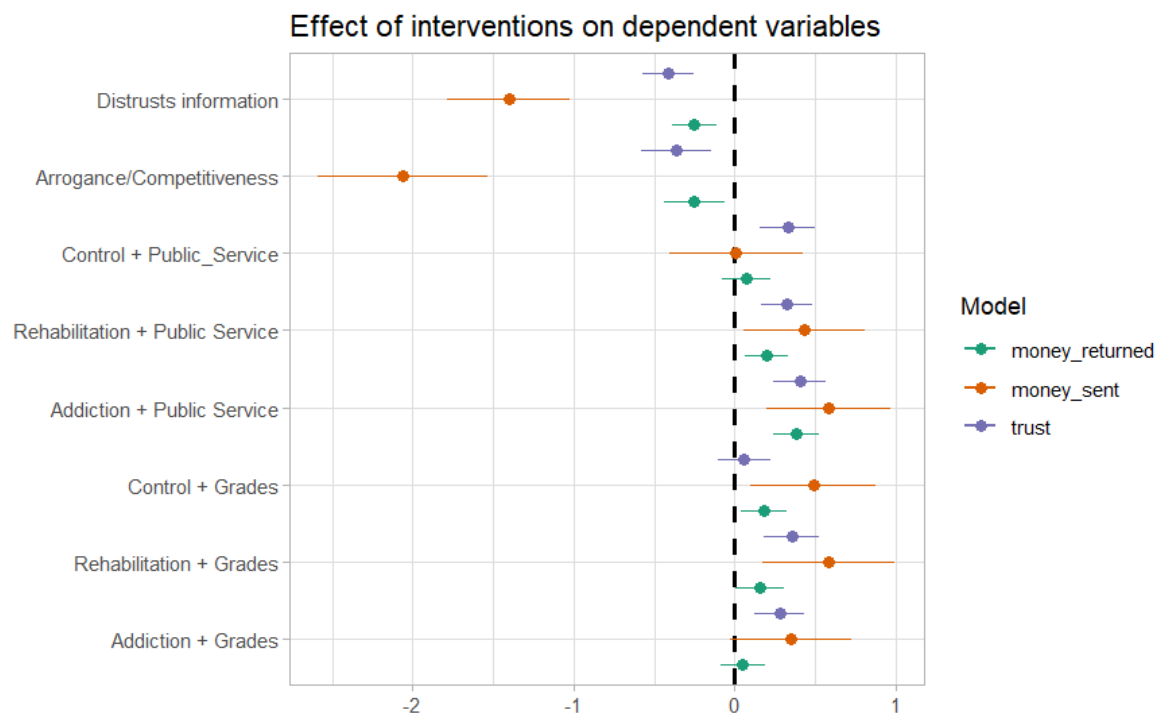
Figure 9. Regression results for fixed effects models.

Table 18 presents the analysis of the effect of interventions (recognition for academic excellence or leadership in public service) categorized by group (Addiction, Rehabilitation, Control), on three dependent variables: money sent, money returned, and trust. In addition, two additional variables, "Arrogance/Competitiveness" and "Distrusts Information," were included to capture the participant's perception of the depicted person as conceited, arrogant, or competitive after the intervention, and their reported level of distrust towards the information received about the receiver, respectively. These variables were incorporated as control measures to address the participant's inclination to penalize the receiver based on perceived arrogance or competitiveness and skepticism towards the provided information, influencing the results across all dependent variables.

The analysis reveals that the impact of interventions on the trust placed in "the receiver" differs across various groups. Specifically, the intervention involving the receiver who underwent rehabilitation and received recognition for their good grades had a significant positive effect on trust (coefficient: 0.352, p<0.05). This indicates that when participants were informed about the receiver's struggle with substance abuse, his subsequent rehabilitation, and then provided with information about his academic achievements, it influenced participants to place greater trust in the receiver. Additionally, the intervention that involved academic recognition demonstrated a marginally significant effect for participants who were informed that the receiver had a history of substance abuse but did not undergo rehabilitation (coefficient: 0.277, p<0.1). This suggests that being recognized for academic performance had a relatively weaker influence on the trust placed in the receiver for the addiction group compared to the rehabilitation group.

The study did not find significant effects of being recognized for academic performance on the trust placed in the receiver in the control group. This lack of significance could be attributed

to the fact that participants in the control group were less responsive to the receiver's good grades compared to the treatment groups. In other words, academic achievements may have been relatively less surprising for the control group participants, which weakened the impact of the intervention on their decision-making.[19] These findings highlight the effectiveness of interventions that highlight an individual's strengths and competence can play a crucial role in breaking down stigmatizing attitudes and promoting trust towards individuals with a history of substance abuse, particularly when participants are made aware of their partner's struggles with substance abuse and their subsequent rehabilitation.

The analysis of the intervention involving community leadership reveals significant findings. In both the addiction and rehabilitation groups, being recognized for community service is significantly associated with higher levels of trust (p-value = 0.05), with coefficients of 0.403 and 0.320, respectively. However, for the control group, the association between being recognized for public service and trust is only marginally significant. Furthermore, being recognized for leadership in public service is positively associated with a higher expected amount of money returned by the receiver specifically in the addiction group (coefficient: 0.380). The variable was statistically significant (p-value = 0.01). However, this association is not significant for the other groups. These findings suggest that engaging in public service plays a more significant role in building trust and increasing the expected reciprocity among individuals in the addiction group compared to the other groups.

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[19] A model analyzing trust outcomes after the interventions, disaggregated by groups, indicates that the interventions were effective solely for the treatment group. The results of this analysis can be found in Table 19 of Appendix 2A. This finding suggests that the interventions had a significant impact on trust levels for participants with substance abuse histories (the treatment group) but did not produce similar effects for the control group. The detailed results and statistical analysis can be referred to in Table 19 for a comprehensive understanding of the intervention's effectiveness across groups.

The variable "Distrusts Information" exhibits a significant negative association with trust (p-value = 0.01). This implies that being skeptical of information is connected to a decrease in trust levels by -0.413 points. Moreover, this variable is responsible for a reduction of $1.402 in the amount of money sent by the sender, indicating its statistical significance (p-value = 0.01). However, it is worth noting that this variable is only marginally significant for the expected return of money by the receiver. This means that while being skeptical of information negatively impacts trust and the financial decisions, its effect on the receiver's expected return of money is not as pronounced or statistically significant. In other words, the receiver's perception of trustworthiness and willingness to reciprocate may be influenced by factors other than their skepticism towards information.

Finally, the variable "Perceived Arrogance" is found to have a negative association with the amount of money sent by the sender (p-value = 0.01). This means that after the intervention, if individuals are perceived as more arrogant or competitive, the sender tends to send $2.062 less. In simpler terms, when individuals are seen as displaying higher levels of arrogance or competitiveness, the sender becomes less empathetic and may believe that these individuals do not need help or support, leading to lower monetary contributions from the sender. This highlights the importance of not only providing positive information about individuals' achievements and competence but also being mindful of how they are perceived by others. Perceived arrogance or competitiveness can impact the sender's willingness to offer financial support, emphasizing the significance of cultivating positive attitudes and reducing stigmatization towards individuals with substance abuse histories.

To summarize, the effects of interventions on the dependent variables are heterogenous, revealing the complexity of how participants process information when interacting with

stigmatized groups. Recognition for academic excellence is found to positively influence trust in the addiction and rehabilitation groups, while it does not have a significant impact on trust in the control group. Notably, engaging in public service has a stronger effect on building trust and promoting expected reciprocity within the addiction group compared to other groups. Moreover, factors like distrust in information and perceived arrogance play important roles in shaping both trust and cooperative behavior, influencing the amount of money sent by the sender. These findings emphasize heterogenous effects of interventions and individual factors in shaping trust and cooperation, providing valuable insights for designing effective interventions that improve cooperation and trust.

Additionally, the variables "Distrusts Information" and "Perceived Arrogance" play significant roles in shaping the money sent by the sender and trust placed in the receiver. These findings emphasize the negative impact of distrust and perceptions of arrogance or competitiveness on cooperative behavior and trust levels. Overall, this analysis offers valuable insights into the multifaceted nature of cooperation, expected reciprocity, and trust, particularly within stigmatized contexts. The findings contribute to a deeper understanding of the underlying dynamics and have implications for fostering trust and promoting positive social interactions.

Mediation Analysis

To gain a deeper understanding of the interventions discussed earlier, I conducted further research and expanded the existing model by including the variables of warmth and competence (refer to table 20 in Appendix 2A). This allowed me to explore the underlying processes that mediate the relationships between the interventions and the dependent variables. By incorporating changes in warmth and competence after the interventions into the model, I gained valuable

insights into the mechanisms through which the interventions influence the dependent variables. Interestingly, once these variables were included, the coefficients associated with the interventions across all groups lost statistical significance, except for warmth, which remained consistently significant. These findings indicate that warmth plays a crucial role in mediating the relationship between the interventions and the dependent variables. It suggests that participants' perceptions of warmth are the primary mechanism through which the interventions affect outcomes such as cooperation, expected reciprocity, and trust.
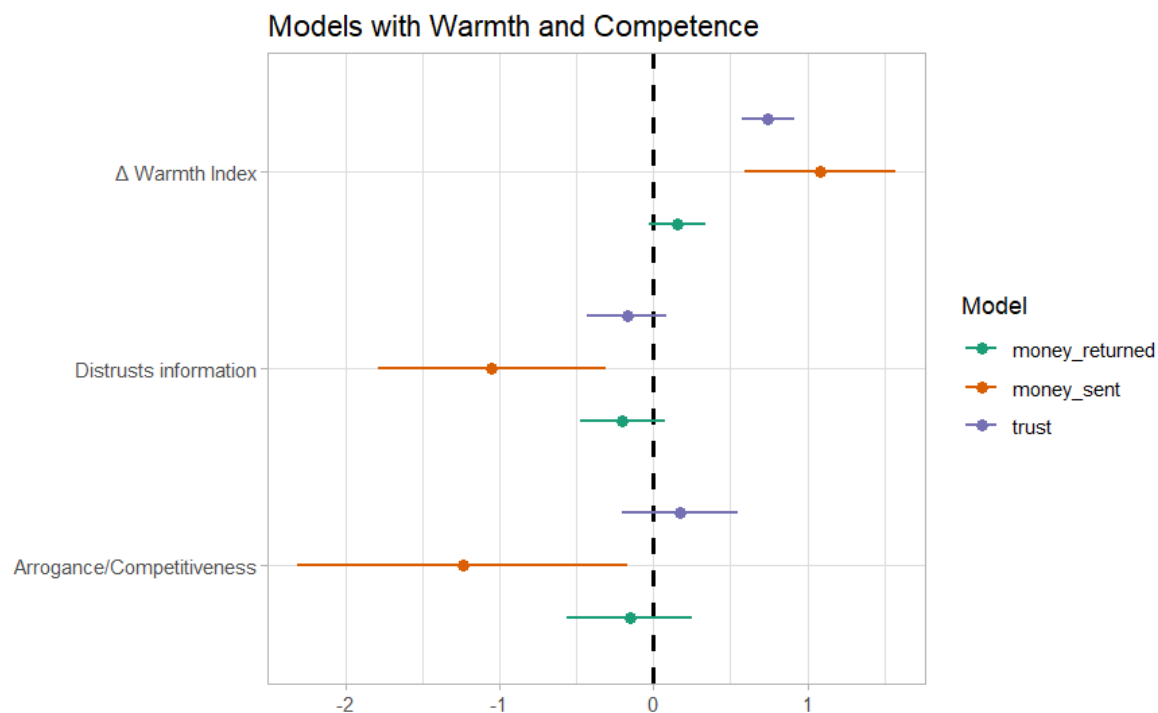
Figure 10. Results for models with fixed effects and warmth and competence indexes.

The analysis of the coefficients related to the warmth index consistently reveals positive associations with all dependent variables. A one-unit increase in the warmth index is associated with a significant increase in the amount of money sent by the sender, totaling $1.082 (p-value = 0.01). This finding indicates that higher levels of perceived warmth positively influence individuals' willingness to send money to the receiver. Similarly, warmth is strongly linked to a

substantial boost in the level of trust, with a 0.744-point increment (p<0.01). This suggests that individuals who perceive higher levels of warmth are more inclined to trust the receiver after the interventions took place. These effects are statistically significant (p-value = 0.01).

The analysis did not show statistically significant results for the competence index in the examined relationships. One possible reason for this lack of significance could be the presence of a harmful effect resulting from the new information provided, impacting participants' perception of the receiver's demeanor, specifically regarding arrogance or competitiveness. Interestingly, some participants reported consciously reducing the amount of money they sent to the receiver because they believed that someone boasting about their grades did not need financial help. This introduces an interesting layer of complexity when implementing interventions to reduce stigma, as perceptions of deservingness interact with assessments of academic prowess.

Another possible explanation for the lack of significant results could be attributed to the intricate nature of the trust game itself. The money sent by participants in the game is influenced by both strategic considerations and prosocial preferences, while the expectation of money being returned depends on the likelihood of reciprocity. As a result, the impact of competence perceptions on these variables might not strongly influence the overall outcomes. In essence, participants' decisions in the trust game may not be solely guided by their views on the receiver's competence but rather by a complex interplay of various cognitive and emotional factors. While competence perceptions may be significant in some contexts, they might not be the sole determining factor in decision-making within the trust game setting. Furthermore, participants' preconceived notions about the receiver's personality traits and deservingness could have overshadowed the effect of competence perceptions on their financial behavior and trust. This

suggests that the trust game's outcomes are influenced by a combination of factors, making it challenging to isolate the sole impact of competence perceptions on participants' choices.

Furthermore, the analysis revealed significant findings concerning participant perceptions of arrogance or competitiveness and the amount of money sent. Participants who perceived the receiver as arrogant or competitive sent, on average, $1.239 less, and this association was statistically significant (p-value = 0.05). Additionally, participants who expressed higher levels of distrust toward the information they received about their partner were also negatively associated with the amount of money sent. On average, participants sent $1.050 less in such cases, and this association was statistically significant (p-value = 0.01). This suggest that perceptions of arrogance and the participants' skepticism played a significant role in influencing their decisions to send less money, ultimately leading to a decrease in cooperation between the participants and the receivers in the trust game. These findings underscore the significance of individual perceptions and beliefs in shaping cooperation and trust in social interactions.

To further investigate the factors influencing participants' perceptions of distrust and perceived arrogance in response to the information they received, two logistic regression models were employed, with distrust information and perceived arrogance/competitiveness as dependent variables. The regression results are presented in Table 21 of the Appendix 2A. Regarding participants' distrust of information, the variable "Democrat" showed a negative coefficient (-1.240), which was statistically significant (p-value = 0.05). This implies that participants who identified as Democrats were less likely to distrust the information they received compared to participants with different political affiliations. To facilitate interpretation, this coefficient was transformed into log odds ratios. Participants who identified as Democrats had approximately 0.289 times the odds of exhibiting distrust compared to participants with different political

affiliations. In other words, participants who identified as Democrats were approximately 71% less likely to exhibit distrust of information compared to participants with different political affiliations. No other variables demonstrated statistically significant effects on Distrust Information.

Moving on to the variable of "Perceived Arrogance", the coefficient for "Previous Contact" was positive (1.824) and statistically significant (p-value = 0.05). This indicates that participants who had prior contact with individuals with a history of substance abuse were more likely to perceive the information as displaying arrogance or competitiveness. Specifically, participants had prior contact with someone struggling with addiction were 6.2 times more likely to perceive the receiver as arrogant or competitive after receiving the supplementary information compared to those who did not have such contact. Among the other independent variables, only "Yearly Family Income" showed a statistically significant effect (p-value = 0.1), with a negative coefficient (-0.169). This suggests that higher yearly family income was weakly associated with lower levels of perceived arrogance after the interventions.

Overall, these findings provide valuable insights into the complexities of trust-based interactions and decision-making processes. The study sheds light on the significance of factors like arrogance, competitiveness, and trustworthiness in shaping human behavior in the context of support and stigmatization towards individuals with substance abuse histories. The mediating role of perceived warmth and limited influence of competence in the relationships between the interventions and the dependent variables underscore the importance of fostering perceptions of warmth to enhance cooperation and trust among individuals. Further research should explore additional factors that may interact with competence and delve into its specific role within the model. Understanding these psychological factors can help design more effective interventions

and support systems for individuals facing stigmatization due to their past struggles with substance abuse.

Discussion

The objective of this study was to investigate the influence of substance abuse histories on cooperation, expected reciprocity, and trust within a trust game. The findings demonstrated that participants' expectations of reciprocity were significantly affected by their knowledge of their partner's substance abuse histories. Specifically, when participants were aware that their partner was an addict or had undergone rehabilitation, their expectations of reciprocation within the trust game decreased. This effect was particularly pronounced when the partner was identified as a drug addict, highlighting the detrimental impact of addiction stigma on perceived trustworthiness and the ability to reciprocate among individuals with a substance abuse history.

Furthermore, participants with a higher desire for social distance exhibited lower expectations of money being returned during the game and displayed lower levels of trust. These findings underscored the presence of stigma in the context of substance abuse, as individuals with a stronger inclination for social distance held more negative perceptions and expectations of individuals with substance abuse histories. Interestingly, the study also revealed that participants who had prior contact with individuals struggling with substance abuse were more inclined to send more money to the receiver in the trust game. This finding suggests that personal experiences and familiarity with substance abuse can positively influence participants' financial behaviors and their willingness to help. It highlights the potential role of empathy and understanding gained through personal encounters in shaping attitudes and behaviors towards individuals with a history of substance abuse.

In addition to examining the impact of substance abuse histories, the study explored the effects of two interventions aimed at reducing stigma. The analysis showed that recognition for academic excellence was associated with higher levels of trust in both the addiction and rehabilitation groups. This finding suggests that academic achievements can positively influence trust perceptions in stigmatized populations. However, it is important to note that this effect was not observed in the control group, indicating that academic recognition may have different implications for trust in stigmatized versus non-stigmatized populations. Furthermore, leadership in public service was found to be significantly related to trust in both the addiction and rehabilitation groups. This finding suggests that actively engaging in public service activities can contribute to the development of trust among individuals with a history of substance abuse. The absence of a significant association in the control group further emphasizes the specific importance of public service engagement for individuals with substance abuse histories.

The study also explored the mediating roles of warmth and competence in the observed relationships. Perceived warmth emerged as a significant mediator, playing a crucial role at explaining the relationships between the interventions and trust game outcomes. This finding underscores the significance of fostering perceptions of warmth to facilitate cooperation and trust toward stigmatized populations. However, the study did not find significant mediating effects for competence, possibly due to the intricate nature of decision-making in the trust game. It appears that participants' decisions in the trust game are not solely driven by their perceptions of the receiver's competence, but rather influenced by a complex interplay of various cognitive and emotional factors (Alós-Ferrer & Farolfi, 2019; Cox, 2004). Participants' preconceived notions about the receiver's personality traits and deservingness seemed to overshadow the impact of competence perceptions on their financial behavior.

The analysis also identified distrust in information and perceived arrogance or competitiveness as important factors influencing cooperation, as indicated by the lower amounts of money sent by participants in the trust game. Participants that distrusted the information they received were less inclined to send money, indicating a negative influence on cooperation. Similarly, participants who perceived the receiver as arrogant or competitive sent significantly less money, further illustrating the influence of individual perceptions on cooperative behavior. These results suggest that the trust game is shaped by multiple psychological factors, necessitating further research to better understand the intricate dynamics at play.

The results also highlight the importance of considering individual beliefs, prior experiences, and perceptions in interventions aimed at promoting positive social outcomes within stigmatized groups. Overall, these findings contribute to our understanding of the factors shaping cooperative behavior and trust in social interactions with stigmatized groups, offering valuable insights for designing effective interventions and policies to create a more inclusive and supportive society. Based on the findings of the study, several policy recommendations can be created to promote cooperation and trust in interactions involving stigmatized populations, particularly those with a history of substance abuse:

1.   Anti-Stigma Campaigns: Develop and implement targeted anti-stigma campaigns aimed at raising awareness about the challenges faced by individuals with substance abuse histories. These campaigns should focus on dispelling myths and misconceptions surrounding addiction, highlighting the potential for recovery and personal growth, and emphasizing the importance of empathy and understanding.

2.   Promote Warmth and Empathy: Encourage interventions that foster perceptions of warmth and empathy towards individuals with substance abuse histories. Creating an

environment where people feel cared for and supported can enhance cooperation and trust in social interactions.

3.   Peer Support Programs: Establish peer support programs that connect individuals in recovery with those seeking help. Peer support can be a powerful tool in reducing stigmatization, as it allows individuals to connect with others who have experienced similar challenges and triumphs.

4.   Promote Perceptions of Competence: While competence did not emerge as a significant mediator in the study, it remains an important aspect of decision-making. Policy initiatives should explore ways to address competence perceptions positively, ensuring that individuals' skills are recognized and valued.

5.   Reduce Information Skepticism: Develop strategies to reduce information skepticism, particularly in situations where participants receive supplementary information about individuals with substance abuse histories. This can be achieved through transparent and evidence-based communication methods that help build trust in the information provided.

6.   Consider Prior Experience when Crafting Interventions: When designing interventions for individuals with prior experiences with addicts, it is crucial to consider how the information is perceived and to avoid elements that may inadvertently foster arrogance or competitiveness perceptions. Instead, these interventions should prioritize cultivating empathy, understanding, and support for those struggling with addiction or in recovery.

7.   Long-Term Monitoring and Evaluation: Implement long-term monitoring and evaluation of the effectiveness of policy interventions. Regular assessments of outcomes

and impacts will enable policymakers to refine strategies and identify areas that require further attention.

In conclusion, these policy recommendations focus on addressing stigmatization, promoting perceptions of warmth and reducing information skepticism. By implementing these strategies, policy makers can work towards fostering cooperation, trust, and inclusivity in interactions involving individuals with substance abuse histories, ultimately building a more supportive and understanding society.

Limitations and Future Research

While this study has provided valuable insights into the effects of interventions on trust, cooperation, and expected reciprocity within stigmatized groups, there are limitations that need to be acknowledged. Firstly, the sample size and composition of the study were limited, which may restrict the generalizability of the findings to other populations and contexts. The predominantly young white male sample further restricts generalizability. The results primarily speak to the perceptions and behaviors of this specific population, and caution should be exercised when extrapolating these findings to individuals with different characteristics and backgrounds. To enhance the external validity of the results, future research should aim to replicate these findings with larger and more diverse samples.

Another limitation of this study is the reliance on self-report measures. Self-report measures are susceptible to biases and social desirability effects, which can introduce potential inaccuracies in the data. Future research could benefit from incorporating objective measures to provide a more comprehensive and reliable assessment of trust, cooperation, and reciprocity and participant's knowledge of addiction related challenges. By taking these steps, researchers can

strengthen the validity and generalizability of the findings and gain a more comprehensive understanding of the complex factors that influence interpersonal interactions with stigmatized groups.

References:

Adams, Z. W., Taylor, B. G., Flanagan, E., Kwon, E., Johnson-Kwochka, A. V., Elkington, K. S., Becan, J. E., & Aalsma, M. C. (2021). Opioid Use Disorder Stigma, Discrimination, and Policy Attitudes in a National Sample of U.S. Young Adults. *Journal of Adolescent Health*, *69*(2), 321–328. https://doi.org/10.1016/j.jadohealth.2020.12.142

Alós-Ferrer, C., & Farolfi, F. (2019). Trust Games and Beyond. *Frontiers in Neuroscience*, *13*(September), 1–14. https://doi.org/10.3389/fnins.2019.00887

Anderson, L. R., Mellor, J. M., & Milyo, J. (2006). Induced heterogeneity in trust experiments. *Experimental Economics*, *9*(3), 223–235. https://doi.org/10.1007/s10683-006-9124-2

Ashraf, N., Bohnet, I., & Piankov, N. (2006). Decomposing trust and trustworthiness. *Experimental Economics*, *9*(3), 193–208. https://doi.org/10.1007/s10683-006-9122-4

Baldwin, L. M. S. C. M. D. S. (2010). Job Loss Discrimination and Former Substance Use Disorders. *Drug Alcohol Depend*, *23*(110), 1–7. https://doi.org/10.1038/nature08365.Reconstructing

Bargh, J. A., & Williams, E. L. (2006). *The Automaticity of Social Life*.

Barrera, M., Sandier, I. N., & Ramsay, T. B. (1981). Preliminary Development of a Scale of Social Support: Studies on College Students I. In *American Journal of Community Psychology* (Vol. 9, Issue 4).

Birtel, M. D., Wood, L., & Kempa, N. J. (2017). Stigma and social support in substance abuse: Implications for mental health and well-being. *Psychiatry Research*, *252*(c), 1–8. https://doi.org/10.1016/j.psychres.2017.01.097

Brülhart, M., & Usunier, J. C. (2012a). Does the trust game measure trust? *Economics Letters*, *115*(1), 20–23. https://doi.org/10.1016/j.econlet.2011.11.039

Brülhart, M., & Usunier, J. C. (2012b). Does the trust game measure trust? *Economics Letters*, *115*(1), 20–23. https://doi.org/10.1016/j.econlet.2011.11.039

Calabuig, V., Fatas, E., Olcina, G., & Rodriguez-Lara, I. (2016). Carry a big stick, or no stick at all: Punishment and endowment heterogeneity in the trust game. *Journal of Economic Psychology*, *57*, 153–171. https://doi.org/10.1016/j.joep.2016.09.006

Cañadas, E., Rodríguez-Bailón, R., & Lupiáñez, J. (2015). The effect of social categorization on trust decisions in a trust game paradigm. *Frontiers in Psychology*, *6*(OCT). https://doi.org/10.3389/fpsyg.2015.01568

Case, T., Gim, H., Gahler, H., & Harwood, J. (2021). For the love of music: Changing Whites' stereotypes of Asians with mediated intergroup musical contact. *Journal of International and Intercultural Communication*, *0*(0), 1–19. https://doi.org/10.1080/17513057.2021.1985590

Chaudhuri, A., & Gangadharan, L. (2007). An Experimental Analysis of Trust and Trustworthiness. In *Journal* (Vol. 73, Issue 4).

Chetty, R., Hofmeyr, A., Kincaid, H., & Monroe, B. (2021). The Trust Game Does Not (Only) Measure Trust: The Risk-Trust Confound Revisited. *Journal of Behavioral and Experimental Economics* , *90*. https://doi.org/10.1016/j.socec.2020.101520

Christie, N. C. (2021). The role of social isolation in opioid addiction. *Social Cognitive and Affective Neuroscience*, *16*(7), 645–656. https://doi.org/10.1093/scan/nsab029

Corrigan, P. W., Kuwabara, S. A., & O'Shaughnessy, J. (2009). The public stigma of mental illness and drug addiction: Findings from a stratified random sample. *Journal of Social Work*, *9*(2), 139–147. https://doi.org/10.1177/1468017308101818

Corrigan, P. W., Lurie, B. D., Goldman, H. H., Slopen, N., Medasani, K., & Phelan, S. (2005). How adolescents perceive the stigma of mental illness and alcohol abuse. *Psychiatric Services*, *56*(5), 544–550. https://doi.org/10.1176/appi.ps.56.5.544

Cox, J. C. (2004). How to identify trust and reciprocity. *Games and Economic Behavior*, *46*(2), 260–281. https://doi.org/10.1016/S0899-8256(03)00119-2

Crisp, A., Gelder, M., Goddard, E., & Meltzer, H. (2005). Stigmatization of people with mental illnesses: a follow-up study within the Changing Minds campaign of the Royal College of Psychiatrists. *World Psychiatry : Official Journal of the World Psychiatric Association (WPA)*, *4*(2), 106–113.

Dannatt, L., Ransing, R., Calvey, T., Scheibein, F., Saad, N. A., Shirasaka, T., Ramalho, R., Pant, S., Vadivel, R., Siste, K., Stowe, M. J., Kalita, K. N., Boujraf, S., Testa, R., Arya, S., Morgan, N., & Grandinetti, P. (2021). The Impact of Stigma on Treatment Services for People With Substance Use Disorders During the COVID-19 Pandemic—Perspectives of NECPAM Members. *Frontiers in Psychiatry*, *12*(March), 10–13. https://doi.org/10.3389/fpsyt.2021.634515

Dobkin, P. L., De Civita, M., Paraherakis, A., & Gill, K. (2002). The role of functional social support in treatment retention and outcomes among outpatient adult substance abusers. *Addiction*, *97*(3), 347–356. https://doi.org/10.1046/j.1360-0443.2002.00083.x

Dunkel-Schetter, C. , & S. L. A. (1990). Determinants of social support provision in personal relationships. *Journal of Social and Personal Relationships*, *7*(4), 437–450.

Eaton, K., Ohan, J. L., & Dear, G. (2015). The stigmatisation of the provision of services for alcohol and other drug users: A systematic literature review. *Drugs: Education, Prevention and Policy*, *22*(1), 19–25. https://doi.org/10.3109/09687637.2014.977230

Fairley, K., Sanfey, A., Vyrastekova, J., & Weitzel, U. (2016). Trust and risk revisited. *Journal of Economic Psychology*, *57*, 74–85. https://doi.org/10.1016/j.joep.2016.10.001

Feelemyer, J. P., Don C Des Jarlais, Kamyar Arasteh, Phillips, B. W., & Hagan, H. (2014). Changes in Quality of Life (WHOQOL-BREF) and Addiction Severity Index (ASI) among participants in Opioid Substitution Treatment (OST) in Low and Middle Income Countries: An International Systematic Review. *Drug Alcohol Depend.*, *1*(134), 1–17. https://doi.org/10.1016/j.earlhumdev.2006.05.022

Fiske, S. T. (2018). Stereotype Content: Warmth and Competence Endure. *Current Directions in Psychological Science*, *27*(2), 67–73. https://doi.org/10.1177/0963721417738825

Franke, M. L., Lersner, U. von, Essel, O. Q., Adorjan, K., Schomerus, G., Gómez-Carrillo, A., Tam Ta, T. M., Böge, K., Mobashery, M., Dettling, M., Diefenbacher, A., Angermeyer, M. C., & Hahn, E. (2019). The relationship between causal beliefs and desire for social distance towards people with schizophrenia and depression: Results from a survey of young Ghanaian adults. *Psychiatry Research*, *271*, 220–225. https://doi.org/10.1016/j.psychres.2018.11.030

Frenken, M., & Imhoff, R. (2022). Don't trust anybody: Conspiracy mentality and the detection of facial trustworthiness cues. *Applied Cognitive Psychology*, *April*, 1–10. https://doi.org/10.1002/acp.3955

Gambetta, D. (2000). Can We Trust Trust? In D. Gambetta (Ed.), *Trust: Making and Breaking Cooperative Relations* (pp. 213–237). University of Oxford. https://www.researchgate.net/publication/255682316

George, Darren., & Mallery, Paul. (2003). *SPSS for Windows Step by Step: A Simple Guide and Reference. 14.0 Update.* (4th ed.). Allyn & Bacon.

Granfield, R., & Cloud, W. (2001). Social context and "natural recovery": The role of social

    capital in the resolution of drug-associated problems. *Substance Use and Misuse*, *36*(11),

    1543–1570. https://doi.org/10.1081/JA-100106963

Hammersley, R., Reid, M., & Hammersley, R. (2002). Why the pervasive addiction myth is still

    believed. *Addiction Research and Theory*, *10*(1), 7–30.

    https://doi.org/10.1080/16066350290001687

Henderson, C., Evans-Lacko, S., & Thornicroft, G. (2013). Mental illness stigma, help seeking,

    and public health programs. *American Journal of Public Health*, *103*(5), 777–780.

    https://doi.org/10.2105/AJPH.2012.301056

Holm, H., & Nystedt, P. (2008). Trust in surveys and games - A methodological contribution on

    the influence of money and location. *Journal of Economic Psychology*, *29*(4), 522–542.

    https://doi.org/10.1016/j.joep.2007.07.010

House, J. S. (1981). *Work stress and social support*. Addison-Wesley Pub. Co.

Houser, D., Schunk, D., & Winter, J. (2010). Distinguishing trust from risk: An anatomy of the

    investment game. *Journal of Economic Behavior and Organization*, *74*(1–2), 72–81.

    https://doi.org/10.1016/j.jebo.2010.01.002

Hürriyetoğlu, Ali., Tanev, H., Yörük, E., & Zavarella, V. (2020). Workshop on Automated Event

    Extraction of Socio-political Events from News. In *Proceedings of the Workshop on*

    Automated Extraction of Socio-political Events from News 2020 (Issue May).

Johnson, N. D., & Mislin, A. A. (2011). Trust games: A meta-analysis. *Journal of Economic*

    Psychology, *32*(5), 865–889. https://doi.org/10.1016/j.joep.2011.05.007

Jorm, A. F., & Oh, E. (2009). Desire for social distance from people with mental disorders: a

    review. In *Australian and New Zealand Journal of Psychiatry* (Vol. 43).

Kilian, C., Manthey, J., Carr, S., Hanschmidt, F., Rehm, J., Speerforck, S., & Schomerus, G. (2021). Stigmatization of people with alcohol use disorders: An updated systematic review of population studies. *Alcoholism: Clinical and Experimental Research*, *45*(5), 899–911. https://doi.org/10.1111/acer.14598

Krause, N. (2016). Assessing Supportive Social Exchanges Inside and Outside Religious Institutions: Exploring Variations among Whites, Hispanics, and Blacks. *Social Indicators Research*, *128*(1), 131–146. https://doi.org/10.1007/s11205-015-1022-6

Lawrence, B. (2004). Stereotypes and stereotyping: A moral analysis. *Philosophical Papers*, *33*(3), 251–289.

Leung, H. T. T., & Wincenciak, J. (2019). Discrepancy between first impression and social description, and its effect on people's attitude. *Humanities and Social Sciences Reviews*, *7*(1), 11–18. https://doi.org/10.18510/hssr.2019.712

Link, B. G., & Phelan, J. C. (2017). Labeling and Stigma. *A Handbook for the Study of Mental Health: Social Contexts, Theories, and Systems*, 393–408. https://doi.org/10.1017/9781316471289.024

Li, P. (n.d.). *Social Support and Discrimination: The Experiences of Recovering Social Support and Discrimination: The Experiences of Recovering Heroin Addicts in Kunming, China Heroin Addicts in Kunming, China*. https://digitalcollections.sit.edu/isp_collection

Livingston, J. D., Milne, T., Fang, M. L., & Amari, E. (2012). The effectiveness of interventions for reducing stigma related to substance use disorders: A systematic review. *Addiction*, *107*(1), 39–50. https://doi.org/10.1111/j.1360-0443.2011.03601.x

Lloyd, C. (2013). The stigmatization of problem drug users: A narrative literature review. *Drugs: Education, Prevention and Policy*, *20*(2), 85–95. https://doi.org/10.3109/09687637.2012.743506

Luty, J., Umoh, O., & Nuamah, F. (2009). Effect of brief motivational interviewing on stigmatised attitudes towards mental illness. *Psychiatric Bulletin*, *33*(6), 212–214. https://doi.org/10.1192/pb.bp.108.020925

Mayer et al. (1995). An Integrative Model of Organizational Trust Author (s): Roger C . Mayer , James H . Davis and F . David Schoorman Published by : Academy of Management Stable URL : http://www.jstor.com/stable/258792 REFERENCES Linked references are available on JSTOR f. *Academy of Management Review*, *20*(3), 709–734.

McGinty, E. E., Goldman, H. H., Pescosolido, B., & Barry, C. L. (2015). Portraying mental illness and drug addiction as treatable health conditions: Effects of a randomized experiment on stigma and discrimination. *Social Science and Medicine*, *126*, 73–85. https://doi.org/10.1016/j.socscimed.2014.12.010

Milfeld, T., Haley, E., & Flint, D. J. (2021). A Fresh Start for Stigmatized Groups: The Effect of Cultural Identity Mindset Framing in Brand Advertising. *Journal of Advertising*, *50*(5), 603–621. https://doi.org/10.1080/00913367.2021.1913264

Muncan, B., Walters, S. M., Ezell, J., & Ompad, D. C. (2020). "they look at us like junkies": Influences of drug use stigma on the healthcare engagement of people who inject drugs in New York City. *Harm Reduction Journal*, *17*(1), 1–9. https://doi.org/10.1186/s12954-020-00399-8

Overton, J., Fretwell, M. D., & Dum, C. P. (2021). Who do you trust? College students'
    attribution of stigma to peers with incarceration histories. *Journal of Experimental
    Criminology*. https://doi.org/10.1007/s11292-021-09463-0

Perry, B. L. ;Bernice A. P. A. C. K. (2020). The unique nature of public stigma toward non-
    medical prescription opioid use and dependence. *Addiction*, *115*, 23172326.

Perry, B. L., Pescosolido, B. A., & Krendl, A. C. (2020). The unique nature of public stigma
    toward non-medical prescription opioid use and dependence: a national study. *Addiction*,
    115(12), 2317–2326. https://doi.org/10.1111/add.15069

Practitioners, C. J., & Experience, L. (n.d.). *The Stigmatization of Justice-involved Individuals
    with Substance Use Disorders*.

Pryor, J., B. Reeder, Glenn D. Monroe, & Andrew E. (2012). The infection of bad company.
    Stigma by association. In *Journal of Personality and Social Psychology* (Vol. 102, Issue 2).

Putnam, R. D. (2000). *Bowling alone : the collapse and revival of American community*. Simon
    & Schuster.

Radcliffe, P., & Stevens, A. (2008). Are drug treatment services only for "thieving junkie
    scumbags"? Drug users and the management of stigmatised identities. *Social Science and
    Medicine*, *67*(7), 1065–1073. https://doi.org/10.1016/j.socscimed.2008.06.004

Rao, H., Mahadevappa, H., Pillay, P., Sessay, M., Abraham, A., & Luty, J. (2009). A study of
    stigmatized attitudes towards people with mental health problems among health
    professionals. *Journal of Psychiatric and Mental Health Nursing*, *16*(3), 279–284.
    https://doi.org/10.1111/j.1365-2850.2008.01369.x

Sapienza, P., Toldra-Simats, A., & Zingales, L. (2013a). Understanding trust. *Economic Journal*,
    123(573), 1313–1332. https://doi.org/10.1111/ecoj.12036

Sapienza, P., Toldra-Simats, A., & Zingales, L. (2013b). UNDERSTANDING TRUST. In

    Source: The Economic Journal (Vol. 123, Issue 573).

Scheidell, J. D., Dyer, T. V., Hucks-Ortiz, C., Abrams, J., Mazumdar, M., Cleland, C., Irvine, N.,

    Turpin, R. E., Severe, M., Mayer, K., & Khan, M. (2021). Characterisation of social support

    following incarceration among black sexual minority men and transgender women in the

    HPTN 061 cohort study. *BMJ Open*, *11*(9), 1–10. https://doi.org/10.1136/bmjopen-2021-

    053334

Sciences, S. (2016). Ending discrimination against people with mental and substance use

    disorders: The evidence for stigma change. In *Ending Discrimination Against People with*

    Mental and Substance Use Disorders: The Evidence for Stigma Change.

    https://doi.org/10.17226/23442

Semple, S. J., Grant, I., & Patterson, T. L. (2005). Utilization of drug treatment programs by

    methamphetamine users: The role of social stigma. *American Journal on Addictions*, *14*(4),

    367–380. https://doi.org/10.1080/10550490591006924

Simonds, R., Reisig, M. D., Trinkner, R., & Holtfreter, K. (2021). The effect of prior

    incarceration on trust and social support: results from two factorial vignette studies. In

    Journal of Offender Rehabilitation (Vol. 60, Issue 7, pp. 464–484).

    https://doi.org/10.1080/10509674.2021.1966154

Tang, Y., & Gong, Z. (2023). Trust game, survey trust, are they correlated? Evidence from

    China. *Current Psychology*, *February*. https://doi.org/10.1007/s12144-023-04448-w

Troup, L. J., Erridge, S., Ciesluk, B., & Sodergren, M. H. (2022). Perceived Stigma of Patients

    Undergoing Treatment with Cannabis-Based Medicinal Products. *International Journal of*

    Environmental Research and Public Health, *19*(12). https://doi.org/10.3390/ijerph19127499

Uscinski, J. E., Klofstad, C., & Atkinson, M. D. (2016). What Drives Conspiratorial Beliefs? The

 Role of Informational Cues and Predispositions. *Political Research Quarterly*, *69*(1), 57–

 71. https://doi.org/10.1177/1065912915621621

Van Boekel, L. C., Brouwers, E. P. M., Van Weeghel, J., & Garretsen, H. F. L. (2013). Stigma

 among health professionals towards patients with substance use disorders and its

 consequences for healthcare delivery: Systematic review. *Drug and Alcohol Dependence*,

 131(1–3), 23–35. https://doi.org/10.1016/j.drugalcdep.2013.02.018

van Olphen, J., Eliason, M. J., Freudenberg, N., & Barnes, M. (2009). Nowhere to go: How

 stigma limits the options of female drug users after release from jail. *Substance Abuse:*

 Treatment, Prevention, and Policy, *4*, 1–10. https://doi.org/10.1186/1747-597X-4-10

Vilsaint, C. L., Hoffman, L. A., & Kelly, J. F. (n.d.). *Perceived discrimination in addiction*

 recovery: Assessing the prevalence, nature, and correlates using a novel measure in a U.S.

 National sample HHS Public Access. https://doi.org/10.1016/j.drugalcdep

Vilsaint, C. L., Hoffman, L. A., & Kelly, J. F. (2020). Perceived discrimination in addiction

 recovery: Assessing the prevalence, nature, and correlates using a novel measure in a U.S.

 National sample. *Drug and Alcohol Dependence*, *206*, 1–19.

 https://doi.org/10.1016/j.drugalcdep.2019.107667

Woo. (2017). 乳鼠心肌提取 HHS Public Access. *Physiology & Behavior*, *176*(1), 139–148.

Wurtele, S. K., & Maruyama, L. (2013). Changing Studentsâ€™ Stereotypes of Older Adults.

 Teaching of Psychology, *40*(1), 59–61. https://doi.org/10.1177/0098628312465867

Appendix 2A: Trust Game

Table 15. Regression results for trust game before interventions.

	Dependent variables		
	Money sent	Expected return	Trust
Addiction	-0.541	-0.471**	-0.034
	(0.610)	(0.190)	(0.174)
Rehabilitation	0.389	-0.450**	-0.162
	(0.602)	(0.188)	(0.172)
Public Stigma	-0.507*	0.061	-0.054
	(0.305)	(0.095)	(0.087)
Social Distance	-0.539*	-0.296***	-0.545***
	(0.309)	(0.096)	(0.088)
Previous Contact	1.139**	-0.014	-0.250*
	(0.527)	(0.164)	(0.150)
Conservatism	-0.280	-0.159*	-0.053
	(0.298)	(0.093)	(0.085)
Male	-0.046	0.073	-0.002
	(0.510)	(0.159)	(0.145)
Minority	-0.427	-0.095	-0.122
	(0.527)	(0.164)	(0.150)
Age	-0.004	-0.004	0.003
	(0.020)	(0.006)	(0.006)
Income	0.028	0.007	-0.008
	(0.074)	(0.023)	(0.021)
Education	0.421*	0.104	0.032
	(0.250)	(0.078)	(0.071)
Democrat	0.390	0.738	0.332
	(1.673)	(0.522)	(0.477)
Republican	1.135	0.940*	0.436
	(1.711)	(0.534)	(0.488)
Independent	1.807	0.787	0.535
	(1.673)	(0.522)	(0.477)
West	0.318	0.088	-0.071
	(0.687)	(0.214)	(0.196)

Midwest	0.542	0.209	0.076
	(0.770)	(0.240)	(0.220)
South	0.845	0.135	-0.119
	(0.748)	(0.234)	(0.213)
Constant	6.794***	2.886***	4.581***
	(2.528)	(0.789)	(0.721)
Observations	177	177	177
R^2	0.164	0.189	0.266
Adjusted R^2	0.074	0.102	0.188
Residual Std. Error (df = 159)	3.152	0.984	0.899
F Statistic (df = 17; 159)	1.830**	2.178***	3.390***

Note: $^*p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

Table 16. Regression results for trust game before interventions with additional controls.

	Dependent variables		
	Money sent	Expected return	Trust
Addiction	-0.653	-0.551***	0.027
	(0.649)	(0.205)	(0.147)
Rehabilitation	0.415	-0.390*	0.053
	(0.637)	(0.201)	(0.145)
Warmth Index	1.270**	0.299*	0.930***
	(0.558)	(0.176)	(0.127)
Competence Index	-0.447	-0.100	0.166
	(0.574)	(0.181)	(0.130)
Brain Mechanisms	-0.773**	0.048	-0.105
	(0.339)	(0.107)	(0.077)
Previous Contact	1.149**	0.033	-0.200
	(0.570)	(0.180)	(0.129)
Social Distance Index	-0.222	-0.178	-0.075
	(0.409)	(0.129)	(0.093)
Public Stigma	-0.461	-0.010	-0.022
	(0.328)	(0.103)	(0.074)
Altruism	-0.146	0.091	0.010

	(0.342)	(0.108)	(0.078)
Competitiveness	-0.058	-0.060	-0.016
	(0.270)	(0.085)	(0.061)
Contentiousness	0.071	0.118	-0.105
	(0.288)	(0.091)	(0.065)
Risk Aversion (Lottery)	-0.202	-0.116	0.021
	(0.600)	(0.189)	(0.136)
Risk Aversion (Deal)	-0.629	-0.032	0.063
	(0.616)	(0.194)	(0.140)
Male	-0.101	0.273	0.015
	(0.554)	(0.175)	(0.126)
Minority	-0.173	-0.010	0.070
	(0.563)	(0.178)	(0.128)
Age	-0.003	-0.006	0.004
	(0.021)	(0.007)	(0.005)
Income	0.017	-0.005	-0.014
	(0.080)	(0.025)	(0.018)
Education	0.335	0.131	-0.008
	(0.263)	(0.083)	(0.060)
Democrat	-0.997	0.149	-0.047
	(0.648)	(0.204)	(0.147)
Republican	-0.754	0.029	-0.043
	(0.704)	(0.222)	(0.160)
West	0.392	0.167	-0.029
	(0.737)	(0.233)	(0.167)
Midwest	0.526	0.289	0.094
	(0.804)	(0.254)	(0.182)
South	0.890	0.161	0.046
	(0.790)	(0.249)	(0.179)
Help Addict	0.178	-0.063	-0.047
	(0.257)	(0.081)	(0.058)
Constant	7.078*	1.994*	0.684
	(3.764)	(1.188)	(0.854)
Observations	169	169	169
R^2	0.195	0.205	0.554

	0.061	0.073	0.479
Adjusted R^2	0.061	0.073	0.479
Residual Std. Error (df = 144)	3.158	0.996	0.717
F Statistic (df = 24; 144)	1.454[*]	1.550[*]	7.443[***]

Note: $^*p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

Table 17. Trust game outcomes per knowledge of addiction mechanisms by group.

Groups	Addiction Mechanisms	Money Sent	Expected Returned	Trust
Addiction	1	10.000	3.500	4.000
Addiction	2	7.000	2.250	2.750
Addiction	3	5.412	2.324	2.618
Addiction	4	6.625	2.500	3.500
Addiction	5	2.333	1.667	3.333
Rehabilitation	1	5.000	3.000	4.000
Rehabilitation	2	8.300	2.800	2.400
Rehabilitation	3	5.481	2.037	2.852
Rehabilitation	4	6.706	2.706	2.941
Rehabilitation	5	7.500	2.500	2.500
Control	1	5.000	1.000	4.000
Control	2	7.333	2.667	3.111
Control	3	6.400	2.733	2.833
Control	4	6.538	3.462	3.154
Control	5	5.000	4.000	3.000

Table 18. Regression results for 2nd round of the trust game.

	Dependent variables		
	Money Sent	Expected Return	Trust

Addict + Grades	0.621	0.059	0.393**
	(0.412)	(0.147)	(0.168)
Rehab + Grades	0.972**	0.160	0.537***
	(0.461)	(0.165)	(0.188)
Control + Grades	0.609	0.158	0.141
	(0.420)	(0.150)	(0.171)
Addict + Service	0.756*	0.327**	0.448**
	(0.451)	(0.161)	(0.183)
Rehab + Service	0.682	0.176	0.446**
	(0.443)	(0.158)	(0.180)
Control + Service	0.395	0.082	0.427**
	(0.456)	(0.163)	(0.185)
Arrogance/Competitiveness	-2.047***	-0.265	-0.443**
	(0.520)	(0.186)	(0.211)
Distrusts Information	-0.892***	-0.070	-0.318**
	(0.331)	(0.118)	(0.135)
Observations	356	356	356
R^2	0.130	0.042	0.106
Adjusted R^2	0.109	0.028	0.89
F Statistic (df = 8; 170)	3.178***	0.927	2.519**

Note: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

Table 19. Trust game outcomes after interventions per group.

	Dependent variables		
	Money sent	Expected return	Trust
Addiction	0.453*	0.208**	0.345***
	(0.273)	(0.100)	(0.114)
Rehabilitation	0.480*	0.168	0.341***
	(0.286)	(0.104)	(0.119)
Control	0.261	0.124	0.184
	(0.284)	(0.104)	(0.119)
Perceived Arrogance	-1.991***	-0.258	-0.421**
	(0.510)	(0.186)	(0.213)

	-1.359***	-0.206	-0.413***
Distrust Information	(0.371)	(0.135)	(0.155)

Observations	354	354	354
R^2	0.159	0.045	0.102
Adjusted R^2	0.129	0.033	0.89
F Statistic (df = 5; 172)	6.512***	1.630	3.926***

Note: *p<0.1; **p<0.05; ***p<0.01

Table 20. Regression results for trust game including warmth and competence indexes.

	Dependent variables		
	Money sent	Expected return	Trust
Addict + Grades	0.714	-0.116	0.094
	(0.511)	(0.190)	(0.176)
Rehab + Grades	0.862	-0.125	-0.040
	(0.632)	(0.235)	(0.218)
Control + Grades	0.697	-0.035	-0.192
	(0.536)	(0.199)	(0.185)
Addict + Service	0.433	0.068	-0.156
	(0.555)	(0.206)	(0.191)
Rehab + Service	0.355	-0.055	-0.107
	(0.520)	(0.193)	(0.179)
Control + Service	0.214	-0.123	-0.024
	(0.525)	(0.195)	(0.181)
Arrogance/Competitiveness	-1.134**	-0.151	0.098
	(0.537)	(0.199)	(0.185)
Distrusts Information	-0.616*	-0.012	-0.111
	(0.320)	(0.119)	(0.110)
Competence Index	-0.286	0.093	0.074
	(0.254)	(0.095)	(0.088)
Warmth Index	1.111***	0.166*	0.709***
	(0.246)	(0.091)	(0.085)
Observations	356	356	356

R^2	0.228	0.082	0.430
Adjusted R^2	0.211	0.064	0.205
F Statistic (df = 10; 168)	4.967***	1.491	12.654***

Note: *p<0.1; **p<0.05; ***p<0.01

Table 21. Logistic regressions for distrust and perceived arrogance.

	Dependent variables	
	Distrust Information	Perceived Arrogance
Previous Contact	-0.375	1.824**
	(0.422)	(0.745)
Competitive	0.038	0.194
	(0.221)	(0.325)
Contentious	0.162	-0.432
	(0.225)	(0.284)
Conservatism	-0.328	0.303
	(0.296)	(0.390)
Male	-0.224	-0.131
	(0.430)	(0.594)
Age	-0.012	-0.024
	(0.017)	(0.025)
Yearly Family Income	-0.032	-0.169*
	(0.058)	(0.091)
Education	-0.294	0.368
	(0.207)	(0.294)
Democrat	-1.240**	0.147
	(0.552)	(0.694)
Republican	0.273	-1.167
	(0.624)	(0.990)
West	1.046*	-0.796
	(0.603)	(0.761)
Midwest	-0.069	-0.105
	(0.710)	(0.798)
South	0.329	-1.313

	(0.667)	(0.917)
Constant	0.961	-1.925
	(1.751)	(2.422)
Observations	169	169
Log Likelihood	-81.853	-46.597
Akaike Inf. Crit.	191.706	121.195

Note: *p<0.1; **p<0.05; ***p<0.01

Appendix 2B

Instructions for participants

In this hypothetical game, you will play as a "Sender" with a partner who will be the "Receiver." You will not know your partner's identity, and they will not know yours. Keep in mind that this game is hypothetical, and no money will be awarded to either you or your partner. You will receive $10 at the start of the game, and you can choose to send any amount of money to "the Receiver", ranging from $0 to $10. It is important to note that once you send the money, you will not be able to get it back.

If you send $10 to "the Receiver", the researcher will triple that amount, resulting in $30 for the Receiver to keep. "The Receiver", will then have the option of returning any portion of this tripled amount to you, ranging from $0 to $30. If the Receiver decides to return $20 to you, they will keep $10 of the tripled amount for themselves. Alternatively, if the Receiver decides to return nothing to you, they will keep the entire tripled amount of $30 for themselves. At the end of the game, you will keep the money you didn't send to "the Receiver", plus any money "the Receiver" returned to you, while "the Receiver" will keep the amount that was not returned to you.

Keep in mind that this game is hypothetical, and no money will be awarded to either you or your partner. However, upon completion of the study, participants will be eligible to enter a lottery for a chance to win a cash prize of 5 USD. The winner will be chosen from the total pool, and their prize will be based on the choices they made during the study.

To ensure that you have understood the game, please answer the following question:

1) What is the maximum amount of money you can send to the Receiver in this game?

a) $1

b) $5

c) $10

d) $15

2) If the sender chooses to send $3 to the receiver, what will be the final amount received by the receiver at the end of the game?

a) $3

b) $6

c) $9

d) $10

Questions for participants

3) What is a challenge you have recently faced? Please write you answer in the text box.

a) Text box: _____

Experimental manipulation

This was the response provided by "the Receiver" to the previous question:

I had a tough time managing a substance abuse problem | managing a substance abuse problem and had to undergo rehabilitation to overcome it. [treatments]

I've been struggling with managing my sleep lately and often find myself staying up late at night. [control]

Money Allocation

4) Please indicate the amount of money you want to send to your partner, "the Receiver". You can choose any amount from $0 to $10.

    a) Pick a number from the list (0 to 10).

The amount of money you gave to "The Receiver" has now tripled.

5) How much money would you anticipate receiving back from the Receiver's pool of funds?

    a) Pick a number from the slider.

        a. No return.

        b. Same amount.

        c. Double sent.

        d. All funds.

6) On a scale of 1 to 5, How much did you trust your partner during the game?

    a) Select from Likert scale (1 to 5).

Warmth

7) In a scale of 1 to 5,

    a) How tolerant do you think "the Receiver" is?

    b) How warm do you think "the Receiver" is?

    c) How good-natured do you think "the Receiver" is?

    d) How sincere do you think "the Receiver" is?

Competence

8) In a scale of 1 to 5,

a) How competent do you think "the Receiver" is?

b) How confident do you think "the Receiver" is?

c) How independent do you think "the Receiver" is?

d) How competitive do you think "the Receiver" is?

e) How intelligent do you think "the Receiver" is?

New Information

9) What is an achievement of yours that you take great pride in? Please write you answer in the text box.

a) Text box: _____

Experimental manipulation

This was the response provided by "the Receiver" to the previous question.

Intervention 1 (competence)

I'm thrilled to share that my academic institution has recognized my exceptional academic performance during my college years! My outstanding GPA undoubtedly played a significant role in this recognition, serving as a measure of my academic excellence.

Intervention 2 (warmth)

I'm thrilled to share that I have been honored by a prestigious public service organization for my exceptional leadership skills! I believe that my outstanding commitment to serving the community and making a positive impact played a significant role in earning this recognition.

New Money Allocation

10) After reviewing the additional information about your partner, how much money would you like to give to the "Receiver". Please indicate the amount of money you want to send to "the Receiver".

    a) Pick a number from the list (0 to 10).

The amount of money you gave to "The Receiver" has now tripled.

11) What amount of money would you anticipate receiving back from the Receiver's pool of funds?

    a) No return.

    b) Same amount.

    c) Double sent.

    d) All funds.

Thank you for your participation in this hypothetical Trust Game.

Additional Questions

Public Stigma

12) In a scale of 1 to 5, how much do you agree with these statements:

    a) People with a history of substance abuse are often unreliable and unpredictable.

    b) I feel uncomfortable around people who have struggled with substance abuse in the past.

    c) People with a history of substance abuse are a burden on society.

    d) I believe that people with a history of substance abuse are more likely to engage in criminal behavior.

    e) I would be hesitant to hire someone with a history of substance abuse.

f) People with a history of substance abuse are not capable of fully recovering and leading a productive life.

Previous Contact

13) Have you had previous interactions with someone who has a history of substance abuse?

14) If you answered "yes" to the previous question, please rate your experience on a scale of 1 to 5, with 1 being very negative and 5 being very positive.

15) Do you know anyone who has experienced or is currently struggling with substance abuse?" Select all that apply.

   a) Yes, a family member.

   b) Yes, a friend.

   c) Yes, a coworker.

   d) No, I don't know anyone who has experienced or is currently struggling with substance abuse.

Attribution Theory

In a scale of 1 to 5,

   a) To what extent do you believe that a person's substance abuse problem is caused by their own choices?

   b) To what extent do you believe that a person's substance abuse problem is caused by external factors such as their environment or societal factors?

   c) To what extent do you believe that a person's substance abuse problem is a stable characteristic of their personality?

   d) To what extent do you believe that a person's substance abuse problem can change over time?

e) To what extent do you believe that a person's substance abuse problem is within their control?

f) To what extent do you believe that a person's substance abuse problem can be managed with appropriate support and treatment?

g) To what extent do you believe that a person is to blame for their substance abuse problem?

h) To what extent do you believe that a person is accountable for seeking help for their substance abuse problem?

Chapter 4. "Supporting Recovery: Unraveling the Interplay of Substance Risks, Attitudes toward addiction and recovery and Social Support."

Abstract

This manuscript investigates how various factors, including perceived substance risks, relationship type, attitudes towards addiction and recovery, and prior experiences with individuals facing addiction challenges, influence the provision of social support for individuals with diverse substance abuse histories. The study finds a significant positive association between the perceived risks associated with a substance and the provision of informational support. Furthermore, beliefs concerning the potential for recovery and attributing external causes to addiction enhance the provision of emotional and informational support. Additionally, religiosity exhibits a positive correlation with instrumental and informational support, while a willingness to openly acknowledge a connection with an individual grappling leads to increased willingness to provide instrumental and emotional support.

Conversely, a negative association is observed between the desire for social distance and all social support dimensions. These findings highlight the importance of fostering disclosure of association among individuals who are close to drug addicts and individuals in recovery, as it facilitates social support and contributes to a supportive network for those facing addiction-related challenges. This study highlights the importance of tailored interventions that address diverse substance abuse histories, promote education about the potential for recovery, and combat public stigma. These measures are essential for creating a more supportive and understanding environment for individuals with substance abuse histories.

133

Introduction

Addiction is a complex and multifaceted issue that affects individuals and communities worldwide (Feelemyer et al., 2014; Livingston et al., 2012; Sciences, 2016). Central to the recovery and well-being of individuals facing addiction is the provision of social support, which plays a crucial role in facilitating the journey towards recovery (Dobkin et al., 2002). While the importance of social support in addiction contexts is widely recognized, there remains a significant research gap regarding the reasons why some individuals extend support to those struggling with substance abuse. Understanding the factors that influence individuals' willingness to provide support is essential for developing effective interventions and support systems that can effectively address addiction and promote recovery.

This paper builds upon a previous study that examined the extent to which individuals are willing to offer social support to individuals with a history of substance abuse within their familial or friendship networks (see paper 1). To conduct this research, I adapted a vignette from the study conducted by (Simonds et al., 2021). The vignette presented participants with a scenario wherein they interacted with a person they were familiar with, who opened up about going through a difficult time and sought assistance. The study included two experimental conditions: one involved an individual who had undergone rehabilitation after experiencing substance abuse, while the other condition comprised a control group without any addiction history. Moreover, the study manipulated the relationship between the participant and the person in need, varying it as a family member (e.g., cousin) or a childhood friend. The findings of the study revealed a positive correlation between family membership and the provision of informational support. However, the experiment did not explore the underlying mechanisms driving this association. In order to gain

further insights from this research, I expanded upon the vignettes used in the social support experiment.

The updated vignettes now include specific information about the type of drug to which the individual was addicted. This expansion resulted in eight experimental conditions, representing different addiction scenarios involving drugs such as fentanyl, heroin, cocaine, meth, marijuana, nicotine and alcohol, each with a background of rehabilitation, as well as a control group with no addiction history. The aim of incorporating these variations was to conduct a comprehensive analysis of social support across different addiction backgrounds. In addition to the expanded vignettes, participants were asked about their perceptions of the potential risks associated with each substance. This approach enabled the exploration of how individuals' perceptions of substance-related risks shape their attitudes and behaviors towards providing support.

In order to account for the diverse levels of risk linked to different substances, a risk index was created. This index was developed using carefully crafted questions that covered various dimensions of risk associated with each substance. After running a balance test, the methodology was adjusted to mitigate substance group imbalances. The risk index replaced the type of drug as the main focus of analysis, enabling a comprehensive exploration of perceptions of substance-related risks influenced participants' attitudes and actions when it came to providing support to individuals with diverse addiction histories. This methodological shift sought to understand varying attitudes and actions towards individuals based on their substance-related risks.

The analysis yielded several significant findings. Firstly, a positive association was found between the perceived risk of a substance and the provision of informational support. Individuals were more inclined to offer informational support when they perceived a substance to be more harmful. This suggests that perceptions of substance risk play a role in shaping the type of support

individuals are willing to provide. Secondly, the study found that desire for social distance was strongly associated with a decrease in support across all types of support. This highlights the importance of addressing people's desire for social distance in order to foster a more supportive environment for individuals with addiction histories. Notably, positive beliefs about recovery, prior contact with individuals facing addiction, and positive experiences with them were associated with a lower desire for social distance.

Additionally, the study found that individuals who were more willing to disclose their association with the person depicted in the vignette were more likely to provide instrumental and emotional support. This underscores the significance of creating a safe environment for disclosure, as it encourages supportive behaviors. Equally important is the active effort to reduce stigma by association, as it promotes empathy and understanding towards individuals with addiction histories. The study also found that participants from higher-income families were less likely to provide instrumental and overall support. This may be due to concerns about enabling addictive behaviors, although further investigation is needed to better understand this relationship. Lastly, the study revealed a positive association between religiosity and support, with religious individuals more inclined to offer practical assistance, share information, and provide overall support.

In conclusion, this research significantly advances our understanding of social support provision for individuals with diverse addiction histories. It sheds light on key factors that influence supportive attitudes and behaviors, such as perceived substance risks, the inclination to distance oneself from those with addiction histories, the impact of income and minority status, and past experiences with drug addicts. The study also suggests that encouraging disclosure of personal experiences and associations with drug addicts can help break down barriers and foster empathy and support. Furthermore, the study highlights the potential of religious beliefs in promoting

tolerance, compassion, and support for individuals in recovery. Leveraging these beliefs can contribute to fostering empathetic and supportive networks. By putting these insights into action, we can cultivate empathetic and supportive networks that contribute to the well-being and recovery of individuals facing addiction-related challenges.

This paper is structured as follows. The background section provides an overview of previous studies about the factors that influence social support. The study design section outlines the methodology, including the survey experiment and random assignment of participants to different conditions. The sample characteristics section provides key demographic insights. The model equation section explains the regression models used in the analysis. The results section presents empirical findings, focusing on factors influencing social support. Lastly, the discussion section interprets the results and discusses their implications. By following this structured format, this paper aims to contribute to the understanding of social support dynamics and inform interventions and support systems for individuals with substance abuse histories.

Background

Social support is a crucial aspect of individuals' well-being and encompasses various forms of assistance, encouragement, empathy, and resources provided in interpersonal relationships (Dunkel-Schetter, 1990; House, 1981; Putnam, 2000). Its purpose is to enhance individuals' well-being, help them navigate challenges, and foster positive outcomes[20]. Previous research has emphasized the importance of social support in mitigating the negative effects of stressful events, promoting physical and mental health, promoting recovery from illness and addiction, and

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[20] Social support is defined as interactions or interpersonal exchanges in which a provider attempts to proffer support and a recipient may be helped or benefited by the attempt (House, 181).

enhancing overall quality of life (Birtel et al., 2017; Dobkin et al., 2002; Krause, 2016). House (1981) outlined three major categories that play a role in shaping individuals' ability to give or receive support: personal characteristics, relationship properties, and social/cultural conditions.

Personal characteristics encompass traits and attributes that can either facilitate or impede the provision of support. Relationship properties pertain to the dynamics and characteristics of social connections where support is exchanged. These properties can either facilitate or hinder the giving and receiving of support. Social and cultural conditions encompass the broader societal context that can either foster or discourage the provision of support. Building on this work, Dunkel-Schetter (1990) identifies four categories of variables that influence social support provision: stress factors, recipient factors, relationship factors, and provider factors. Stress factors includes both objective features of stressful situations and appraisal of situations made by both target persons and providers of support (Dunkel-Schetter, 1990). Recipient factors pertain to the characteristics and needs of the individuals seeking support, which can influence the type and extent of support received.

On the other hand, provider factors refer to the characteristics and capabilities of the individuals offering support. These factors include wealth, empathy, mood, perceptions of having a responsibility to provide support, etc. For example, individuals with greater financial resources may have more opportunities to offer tangible assistance or resources to those in need. Additionally, individuals with higher income levels may have access to networks or resources that can facilitate support provision. Empathy is another crucial provider factor. Empathy involves the ability to understand and share the feelings of another person. When individuals possess a high level of empathy, they are more likely to be motivated to provide support to others. Empathy

fosters a sense of compassion and understanding, which can drive individuals to help, empathy, and resources to those in need.

Mood also plays a role in support provision. Individuals in a positive mood tend to be more inclined to help others. Positive emotions can increase altruistic tendencies and make individuals more receptive to providing support. Conversely, individuals in a negative mood or experiencing high levels of stress may find it more challenging to offer support due to their own emotional state or limited resources. Perceptions of responsibility and attributions about the controllability of a person's situation are additional provider factors. If individuals perceive themselves to have a responsibility to help others, they are more likely to offer support. Additionally, attributions about the controllability of a person's circumstances can shape attitudes and intentions to help. If individuals perceive that the person in need has control over their situation (e.g., addiction), it may impact their willingness to provide support (Dunkel-Schetter, 1990).

The nature of the relationship between the provider and recipient of support is another important factor to consider. The dynamics within a relationship can greatly influence the willingness and ability to offer support.[21] Support between close friends or family members, for instance, tends to be more readily available and deeply rooted compared to support in more casual or distant relationships (Dunkel-Schetter, 1990; Simonds et al., 2021). The emotional closeness, shared experiences, and established patterns of support within these relationships contribute to a stronger foundation for providing support. The level of trust and familiarity enables individuals to be more open and responsive to each other's needs, leading to a higher likelihood of effective support provision. Moreover, the availability of resources and support systems in the broader community or society can impact the provision of support (Dobkin et al., 2002; Dunkel-Schetter,

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[21] Proximity, trust, and mutual understanding play key roles in shaping the provision of support.

1990). Communities with well-established support networks, access to healthcare services, and social programs are more likely to facilitate the provision of support. Conversely, communities with limited resources or inadequate support structures may present challenges in offering comprehensive support.

Addiction & Social Support

Individuals with addiction histories often encounter unique challenges in accessing the support they need. Research indicates that stigma surrounding addiction can lead to reduced social support and increased social isolation for individuals struggling with drug addiction (Birtel et al., 2017; Lloyd, 2013). Public stigma, characterized by society's negative attitudes and beliefs towards individuals with addiction, often leads to discrimination and social exclusion (Corrigan et al., 2009; Diering et al., 2018). As a result, public stigma not only discourages others from offering support but also creates a hostile social environment that hampers the help-seeking process (Birtel et al., 2017; Dannatt et al., 2021; Eaton et al., 2015; Muncan et al., 2020; Semple et al., 2005; Van Boekel et al., 2013). Moreover, this stigma also exacerbates feelings of shame, isolation, and hopelessness, compounding the difficulties individuals with addiction face in reaching out for help and engaging in the recovery process (Luoma et al., 2007; Diering et al., 2018).

Beliefs about recovery also play a significant role in influencing the provision of support to individuals struggling with addiction (Livingston et al., 2012; McGinty et al., 2015). Research suggests that individuals who hold positive beliefs about the possibility of recovery are more inclined to offer support and assistance to drug addicts. Conversely, negative beliefs about addiction can hinder support provision and perpetuate the challenges faced by individuals struggling with addiction. Beliefs that view addiction as a moral failing or harbor doubts about the

likelihood of recovery can diminish empathy and discourage individuals from extending their support (McGinty et al., 2015; Radcliffe & Stevens, 2008; Sciences, 2016). Overcoming these negative beliefs is crucial for fostering a compassionate and supportive atmosphere that encourages individuals with addiction to seek help and receive the necessary assistance.

In addition, studies have shown that certain substances, such as opioids, methamphetamine, and cocaine, are more heavily stigmatized due to their perceived high addictiveness, and associations with criminality (Semple et al., 2005; van Olphen et al., 2009; Vilsaint et al., 2020). Research conducted in the UK found that most employers would not hire individuals with a history of heroin or crack cocaine use, highlighting the extent of stigma surrounding drug use (van Olphen et al., 2009). Furthermore, national surveys have revealed a strong public willingness to socially exclude people with opium use disorder (Christie, 2021; Perry, 2020). On the other hand, legal drugs or those that are perceived to be less potent, like marijuana, are often seen in a more positive light, with some even advocating for their medicinal benefits (Lashley & Pollock, 2020; Reid, 2020).

These findings suggest that the type of substance used may impact the social support received by individuals with a history of substance abuse. It is possible that the stigmatization of certain drugs may be a contributing factor to these differences. For example, Christie, (2021) found that individuals with a history of opioid abuse tend to receive less social support from family members compared to those with a history of cocaine or alcohol abuse. Similarly, research conducted by (Yang et al., 2020) found that individuals with a history of heroin use were more likely to report lower levels of social support from family members. The reasons behind these differences are not entirely clear, but they could be related to social and cultural factors associated with different types of substance abuse. Opioid abuse, for instance, is often stigmatized and linked

to criminal behavior, leading to social isolation and reduced support from family and friends (Coid et al., 2000; Savonen et al., 2021). In contrast, alcohol use is more socially accepted and may be associated with a larger social network and more available support.

The stigmatization of certain substances, as discussed above, is likely influenced by people's risk perceptions and attitudes towards those substances. Previous studies have indicated that people's perceptions of the potential dangers and severe consequences associated with specific substances significantly impact their willingness to provide social support (Jones et al., 2019; Smith et al., 2017). Individuals tend to be more concerned and cautious when it comes to substances that are perceived as highly dangerous or having severe consequences for users. Moreover, the existing literature has highlighted that individuals addicted to dangerous substances often experience higher levels of rejection and social stigma compared to those addicted to substances perceived as less harmful. However, one aspect that the literature has overlooked is the influence of pre-existing relationships and longer-term perspectives in these situations.

In situations where there are pre-existing relationships, such as being family members, close friends, or long-term partners of the addict, the dynamics of social support can differ significantly. These established relationships may foster a deeper understanding of the addict's struggles and challenges, leading to heightened empathy and compassion. Consequently, individuals with these personal connections may be more inclined to offer substantial support, even in the face of the perceived risks associated with the dangerous substances. The longer-term perspective in such relationships may also play a critical role. Individuals who have been in close relationships with the addict for an extended period are likely to have witnessed the negative impacts of addiction firsthand. This accumulated experience and emotional investment may lead

to a stronger sense of responsibility and determination to help the addict break free from the harmful substance, despite the associated risks and challenges.

Additionally, when there is an existing bond with the addict, people may view their support provision as an investment in the addict's well-being and the future of the relationship. They may believe that by actively assisting the addict through their recovery journey, they are contributing to the long-term improvement of the addict's life and the overall health of the relationship itself. By overlooking these crucial aspects of pre-existing relationships and longer-term perspectives, the existing literature may not fully capture the complexity of social support dynamics within the context of substance addiction. To address this gap, the present study aims to analyze the viewpoints of support providers and explore the factors influencing their provision of social support. By understanding the dynamics and complexities of support provision from the provider's standpoint, this research seeks to uncover barriers and facilitators that affect their ability to offer effective support to individuals facing addiction.

The findings of this study have significant potential in guiding the development of comprehensive interventions and support systems tailored to address the unique needs of both individuals facing addiction and their support providers. Ultimately, the findings of this study can play a pivotal role in fostering a more compassionate and effective support network, which is vital for enhancing the well-being and recovery of individuals grappling with addiction-related challenges. Furthermore, recognizing and addressing the perspectives of support providers can create a more inclusive and collaborative approach towards addiction. By considering the well-being of both those seeking help and their support providers, a more sustainable and supportive environment can be fostered, facilitating positive outcomes for everyone involved.

Hypotheses Framework

This study adopts a novel perspective by shifting the focus from individuals receiving care to those who provide care in the context of substance abuse. The existing literature on social support for individuals facing addiction has primarily focused on the experiences and needs of those seeking help, neglecting the perspectives of support providers, such as family members and friends. To address this gap, the present study aims to analyze the viewpoints of support providers and explore the factors influencing their provision of social support. By understanding the dynamics and complexities of support provision from the provider's standpoint, this research seeks to uncover barriers and facilitators that affect their ability to offer effective support to individuals facing addiction.

Drawing from existing literature, the study has formulated several hypotheses that aim to explore the potential effects of various factors on participants' willingness to offer social support. The hypotheses encompass the examination of perceived substance risk, beliefs about addiction and recovery, perceptions of different kinds of stigma, relationship type, and religious beliefs as key determinants influencing the participants' likelihood to provide social support. These hypotheses lay the groundwork for data analysis and serve as essential pillars in investigating the intricate dynamics of social support in the context of substance abuse.

Previous studies have indicated that people's perceptions of the potential dangers and severe consequences associated with specific substances significantly impact their willingness to provide social support to those facing addiction related to these substances (Jones et al., 2019; Smith et al., 2017). When individuals perceive a substance as highly dangerous or having severe consequences, they are more likely to recognize the urgency and importance of offering support to those facing addiction to such high-risk substances. This perception of risk can evoke a sense

of responsibility in individuals, motivating them to actively engage in providing support. Consequently, they may offer emotional assistance, provide necessary resources, or encourage the addicted individuals to seek treatment and professional help.

On the other hand, individuals may display lower levels of willingness to provide social support for substances perceived as less risky. They may downplay the severity of addiction related to these substances or believe that individuals struggling with addiction to low-risk substances can manage their situation without extensive external support. This discrepancy in perceived risk can influence their inclination to help, resulting in varying levels of support provision for individuals with addiction histories related to different substances. From these findings, this study hypothesizes that:

Hypothesis 1: The provision of social support will vary depending on the risk associated with each substance. Specifically, individuals are more likely to provide social support when they perceive a substance to be more harmful.

The next hypothesis in this study proposes that individuals' perception of various forms of stigma will significantly impact their willingness to offer social support to those facing addiction. The study will explore three key aspects of stigma in this context. Firstly, the desire for social distance refers to the inclination to maintain physical or emotional distance from individuals with addiction. This desire may stem from various factors, such as fears, misconceptions, or negative stereotypes associated with addiction. If individuals report a stronger desire for social distance, they may be less inclined to provide social support, as they may feel apprehensive about getting involved or fear potential negative consequences for themselves. This hesitation could deter them from extending support, despite recognizing the need for help.

Secondly, the study will examine stigma by association, which refers to the prejudice and discrimination faced by individuals who are associated with drug addicts. Those who express a high concern for stigma by association may hesitate to provide support due to concerns about being unfairly linked to the negative stereotypes commonly associated with addiction. The fear of guilt by association may lead them to distance themselves from offering support, even if they genuinely want to help the person facing addiction. Thirdly, the study will investigate public stigma, which refers to the negative attitudes and beliefs held by society towards individuals with addiction, leading to discrimination and social exclusion. Higher levels of public stigma may influence individuals to internalize these negative attitudes and be less likely to offer social support, as they fear judgment or social repercussions for supporting someone facing addiction-related challenges. Based on these three dimensions of stigma, the study hypothesizes that:

Hypothesis 2: Different types of stigma (desire for social distance, stigma by association, and public stigma) will influence the likelihood of providing social support. Higher levels of reported stigma in any of these indicators will lead to reduced social support, resulting in decreased assistance and engagement with individuals facing addiction-related challenges.

Previous research has shown that family relationships often involve stronger emotional ties, shared experiences, and a sense of obligation to provide support (Pillemer & Suitor, 2016). The perceived closeness and familiarity within family relationships create a sense of responsibility and attachment that can enhance the readiness to provide support. Therefore, participants may exhibit a higher willingness to offer social support to individuals portrayed as family members compared to those portrayed as childhood friends. Consequently, this study hypothesizes that:

Hypothesis 3: Participants will exhibit a higher willingness to provide social support to individuals portrayed as family members (e.g., cousins) compared to individuals portrayed as childhood friends.

Previous research has consistently shown that individuals' beliefs about recovery and addiction play a significant role in shaping their attitudes and behaviors towards supporting individuals with drug addiction (Livingston et al., 2012; McGinty et al., 2015). Positive beliefs about recovery encompass the belief that drug addicts can overcome their addiction, achieve sobriety, and lead fulfilling lives. Holding such positive beliefs leads individuals to view addiction as a treatable condition rather than a permanent state, fostering a sense of hope and optimism. As a result, they are more likely to extend support, offer encouragement, and engage in actions that facilitate the recovery process. Based on these findings, the study hypothesizes that:

Hypothesis 4: Individuals who hold positive beliefs about the possibility of recovery are more likely to offer support and assistance to those struggling with addiction compared to individuals who hold negative beliefs about addiction.

Research suggests that religiosity is associated with a range of prosocial behaviors, including the provision of social support (Pichon et al., 2007; Van Cappellen et al., 2016). Religious beliefs often emphasize values such as compassion, empathy, and helping others, which can motivate individuals to engage in supportive behaviors (Bekkers & Schuyt, 2008; Penner et al., 2005). Additionally, religious teachings and practices may instill a sense of responsibility and duty to assist individuals in need, including those struggling with addiction. Religious individuals may view supporting others as a way to live out their faith and demonstrate their commitment to their religious principles. From these findings, this study hypothesizes that:

Hypothesis 5: Individuals with religious beliefs are more likely to provide social support compared to individuals without religious beliefs.

Study design

Participants were presented with a hypothetical vignette and subsequently required to respond to a series of close-ended survey items. The vignette depicted a scenario where participants had recent interactions with an individual who revealed facing challenges and sought assistance. The vignette incorporated two factors: the type of drug involved and the relationship with the individual, resulting in a total of 16 unique vignettes. In the first experimental condition, the disclosure of substance abuse history was varied across seven different types of substances, including fentanyl, heroin, cocaine, meth, marijuana, nicotine, and alcohol. Additionally, a control group was included, representing individuals without any addiction history. The second experimental condition focused on the relationship between the person in need and the participant, distinguishing between family members (e.g., cousins) and childhood friends. By manipulating this aspect, the study aimed to examine the influence of kinship on participants' perceptions and their willingness to provide social support. Through the manipulation of these experimental conditions, the study aimed to uncover valuable insights into the impact of addiction histories and relationship type on the provision of social support.

Power Analysis

A power analysis was conducted prior to the experiment to determine the optimal sample size. The analysis employed an a priori approach and determined that a sample size of 200 participants would be necessary to achieve a statistical power of 0.95, with an alpha level of 0.05

and a one-tailed test, assuming an effect size of 0.5. To account for potential low-quality responses, an additional 40 participants were planned to be included, resulting in a total target sample size of 240 participants. This supplementary buffer of participants was intended to ensure that the final sample size would meet the required power criteria and that the collected data would maintain high quality and reliability.

Sample Characteristics

Participants were recruited through the platform Connect by Cloud Research and were compensated with $2 for completing the study. A total of 240 individuals were invited to participate in the study. However, only 239 individuals participated in the survey. The sample included 135 males (56%) and 104 females (44%). Regarding race and ethnicity, the largest proportion of the sample was composed of Whites (152 individuals, 63.5%), followed by Black participants (54 individuals, 22.5%). Additionally, 33 individuals (14%) identified as belonging to other minority groups, including Samoan, Guamanian, Hawaiian, American Indian, Japanese, Korean, Asian Indian, Vietnamese, Filipino, and Chinese completed the survey.

In terms of age distribution, the participants were categorized as follows: 46 individuals (19.24%) were between 18 and 29 years old, 96 individuals (40.16%) were between 30 and 44 years old, 65 individuals (27.19%) were between 45 and 59 years old, and 32 individuals (13.38%) were 60 years old or over. Regarding education, participants exhibited a range of educational backgrounds: 3 individuals (1.2%) had less than a high school diploma, 63 individuals (26.3%) held a high school diploma or GED, 38 individuals (15.8%) possessed an associate's or technical degree, 88 individuals (36.8%) obtained a bachelor's degree, and 47 individuals (19.6%) attained

a graduate degree. The participants' yearly family income distribution was diverse, with varying percentages falling within different income brackets, ranging from less than $10,000 to $250,000.

Dependent Variables

To assess the extent of social support, a comprehensive index was utilized, drawing on prior research in the field, particularly the work of Barrera et al. (1981). This index consisted of 12 questions, designed to capture three distinct dimensions of social support: instrumental support, informational support, and emotional support. The first four questions focused on measuring instrumental support, which refers to concrete assistance provided to address practical needs. These questions revolved around scenarios such as financial assistance, job searching support, housing guidance, and social networking introductions. The subsequent four questions were aimed at evaluating informational support, which involves providing advice, feedback, and sharing relevant information to aid individuals in their decision-making and problem-solving processes. Examples of these questions included seeking advice, offering counseling on personal goals, providing information about opportunities (e.g., finding a roommate), and informing individuals about available social services and resources.

The final four questions examined emotional support, which encompasses expressions of care, concern, empathy, and sympathy towards the person in need. These questions gauged the participant's willingness to provide a listening ear, offer a hug, engage in enjoyable activities together, and maintain composure and understanding during conversations, even if the individual's actions may be frustrating. Participants responded to these items using a five-point Likert scale, ranging from "extremely unlikely" (coded as 1) to "extremely likely" (coded as 5). I aggregated the responses to construct a comprehensive support index, which provided an overall measure of

the participants' inclination to offer social support. Additionally, I utilized the independent dimensions of the social support index to identify which specific types of support were either provided or withheld by the participants depending on the group they were assigned to. To assess the reliability of the construct, I employed the Cronbach's alpha test. The results of this analysis are presented in Table 22, providing insights into the reliability of the measurement instruments.[22]

Table 22. Cronbach alpha tests for social support indexes.

Survey items	α	No. of items
Social Support Index	0.871	12
Instrumental Support Index	0.765	4
Informational Support Index	0.776	4
Emotional Support Index	0.710	4

All the scores obtained in this study exceed the threshold of 0.7, indicating acceptable internal consistency (George & Mallery, 2003). This suggests that the survey items employed in measuring participants' willingness to provide social support were reliable. Consequently, I calculated an average score for all twelve survey items to create a proxy for the participants' overall inclination to offer support. In addition, I constructed separate indexes for each dimension of support (instrumental, informational, and emotional) by averaging the responses to the four survey items associated with each dimension.

Experimental manipulations

The study aimed to investigate how addiction histories and relationship dynamics influence participants' perceptions and willingness to provide social support. Two experimental conditions were used to explore these factors. In the first condition, participants were exposed to different

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[22] The Cronbach alpha test is a measure of internal consistency and scale reliability. It measures how closely related a set of items are as a group.

substance abuse history disclosures, encompassing seven distinct substances, along with a control group without any addiction history. However, it is worth noting that the random assignment across groups did not result in optimal balance. The distribution of participants across the groups was uneven, as indicated by the tables provided in the Appendix 3A (refer to tables 22 to 25). To address this issue, I replaced the original treatment variable (type of substance) with participants' assessments of the potential risks associated with each substance. This modification not only provided more informative data but also allowed for the inclusion of additional controls (if the substance was illegal) without introducing multicollinearity. Furthermore, the adjusted R-squared values demonstrated improvements in model fit for all models, except for the model that measured instrumental support, which remained unchanged.[23] These findings suggest that shifting the focus from substance type to perceived risk was a beneficial decision, as it contributed to a better understanding of the relationships under investigation.

Family Networks

In the second manipulation, the study examined the role of relationship dynamics by differentiating between family members and childhood friends. This manipulation aimed to investigate how participants' responses and perceptions vary depending on their relationship with the person in need. To capture this distinction, the variable "cousin" was utilized. It was coded as 1 if the individual described in the vignette was a cousin, and 0 if they were not. By considering the influence of family networks, the study sought to explore the unique dynamics and potential implications that familial relationships can have on participants' willingness to provide social

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[23] The adjusted R-squared is a measure of how well the model accounts for the variation in the dependent variable while considering the number of predictors in the model. A higher adjusted R-squared indicates that a larger proportion of the variance in the dependent variable is explained by the predictors.

support and their overall perceptions of individuals struggling with addiction. This differentiation allowed for a more nuanced analysis of the role of family ties in shaping participants' attitudes and behaviors towards those in need.

Substance Risks Index

The substance risks index was developed by administering a series of carefully designed questions to assess individuals' perceptions of the potential harm associated with the substance presented in the vignette. The questions covered various dimensions of harm, including the individual's personal perception of the substance as harmful (1), the extent to which the substance impairs normal functioning (2), the perceived likelihood of addiction after using the substance (3), the potential physical health harm caused by the substance (4), and the potential mental health harm caused by the substance (5). Participants provided their ratings on a Likert scale, ranging from "strongly agree" to "strongly disagree," to indicate their agreement or disagreement with each statement. To ensure the reliability of the perceived harm index, a Cronbach's alpha test was conducted to assess the internal consistency of the questions.

Table 23. Cronbach alpha tests for risk indexes.

Survey items	α	No. of items
Fentanyl Risk Index	0.929	5
Heroin Risk Index	0.696	5
Cocaine Risk Index	0.757	5
Meth Risk Index	0.749	5
Marijuana Risk Index	0.912	5
Nicotine Risk Index	0.763	5
Alcohol Risk Index	0.783	5

All harm indexes, except for the heroin harm index, demonstrated internal consistency above the recommended threshold of 0.7 (George & Mallery, 2003). This indicates that the survey items effectively measured participants' perceived risks of various substances. To capture

participants' overall evaluation of the substance's potential for harm, the responses across the survey items were averaged, resulting in a single value known as the perceived risk index. In addition to the perceived risk index, another variable was included in the analysis, namely whether the participant thinks that the assigned substance is illegal in his state. This additional variable captures participants' beliefs regarding the legal status of the substance, which may also influence their willingness to help the individual depicted in the vignette.

Desire for Social Distance and Public Stigma

The study aimed to investigate the influence of participants' desire for social distance, perceptions of public stigma towards individuals with drug addiction, and fear of stigma by association on their willingness to help. Participants were asked to rate their comfort levels in various scenarios involving the individual described in the vignette using a rating scale ranging from 1 to 5. These scenarios included attending a social event together, working on a project together, traveling together, sharing a living space together, and participating in a recreational activity together (Overton et al., 2021). Participants' perceptions of public stigma were assessed by having them rate their level of agreement with a series of statements on a 5-point scale, ranging from 1 (strong disagreement) to 5 (strong agreement). These statements covered various beliefs and attitudes towards individuals with drug addiction, including perceptions of reliability, discomfort, societal burden, likelihood of engaging in criminal behavior, lack of employability, and recovery capabilities.

To assess stigma by association, participants were asked to rate their level of concern on a 5-point scale (ranging from 1 - "None at all" to 5 - "A great deal") regarding potential negative judgments from others if they were associated with the person described in the vignette. They also

indicated their worries about potential damage to their own reputation and their tendency to avoid social situations where the person depicted in the vignette is present to avoid being associated with them. These questions directly measure participants' concerns and behaviors related to stigma by association. In addition to the stigma by association questions, an additional question was included in the survey to assess participants' likelihood of disclosing their association with the person described in the vignette to others.

To ensure the reliability and consistency of the survey items measuring "Desire for Social Distance," "Stigma by Association," and "Public Stigma," a reliability test using Cronbach's alpha was conducted to assess the internal consistency of these measures.

Table 24. Cronbach alpha tests for social distance and public stigma.

Survey items	α	No. of items
Social Distance	0.876	5
Public Stigma	0.790	5
Stigma by Association	0.911	3

All of the Cronbach's alpha coefficients obtained in this study exceeded the recommended threshold of 0.7, as suggested by George and Mallery (2003), indicating good internal consistency. This indicates that the survey items measuring participants' desire for social distance, fear of stigma by association and their perceptions of public stigma towards drug addicts are reliable measures. The specific values of the Cronbach's alpha coefficients can be found in Table 20, providing further evidence of the robustness and consistency of the measures used in this study.

The variable "Previous Contact" measures whether participants have had personal experiences with individuals who have struggled with substance abuse. Participants were asked if they knew a family member, friend, or coworker who faced substance abuse issues, and if they answered positively to any of these options, the variable was coded as 1. This variable aimed to capture the influence of participants' prior exposure to addiction-related experiences on their

155

responses. The variable "Rate Contact" measures participants' subjective ratings of their experiences with the individuals who had struggled with substance abuse. Participants were asked to rate their contact experience on a scale ranging from one to five. A higher rating on this scale indicates a more positive or favorable contact experience.

The variable "Addiction Has Internal Cause" measures participants' beliefs regarding the extent to which they attribute a person's substance abuse problem to their own choices. Participants were asked to rate their level of agreement on a scale of 1 to 5, where 1 represents "None at all" and 5 represents "A great deal." Higher scores indicate a stronger belief that individuals bear personal responsibility for their addiction and that their own decisions play a significant role in the development and continuation of substance abuse problems. In contrast, the variable "Addiction Has External Cause" assesses participants' beliefs about the degree to which they attribute a person's substance abuse problem to external factors such as the environment or societal influences. Participants were also asked to rate their level of agreement on a scale of 1 to 5, with 1 indicating "None at all" and 5 indicating "A great deal." Higher scores indicate a stronger belief that external factors beyond an individual's control are primarily responsible for the occurrence and persistence of substance abuse.

The "Addict Can Recover" variable is an index derived from two items that measure participants' beliefs about the potential for individuals with a substance abuse problem to change over time and manage their addiction through treatment. Participants rated their level of agreement on a scale of 1 to 5 for each item. The first item assesses the belief in the possibility of addiction recovery over time, while the second item evaluates the belief in the effectiveness of treatment in helping individuals manage their addiction. The index was created by averaging the scores from these two items. A reliability test using Cronbach's alpha was conducted to assess the consistency

of the index, and the results indicated acceptable reliability (alpha = 0.763). This index provides insights into participants' overall beliefs regarding the recovery potential of individuals with substance abuse issues, considering both the potential for change over time and the perceived efficacy of treatment in managing addiction.

The analysis also accounted for various control variables that have been identified in previous research as influential factors in social support provision. These control variables included conservatism, religiousness, membership in a minority group, age, gender, education level, yearly family income, political party affiliation and region. By including these control variables in the analysis, the study aimed to account for their potential confounding effects and isolate the specific influence of perceived harm and relationship type on social support provision. This comprehensive approach allowed for a more accurate examination of the relationship between the variables of interest while minimizing the impact of confounding factors.

Model Equation

The OLS regressions can be written as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + V'\delta + Z'\gamma + K'\omega + W'\alpha + \varepsilon_i$$

Y represents the dependent variable, which captures the participant's willingness to provide social support. This can be measured using various indices, including the social support index, instrumental support index, informational support index, or emotional support index.

β_0 represents the intercept term, representing the baseline effect on the dependent variable.

X_1 represents the harm index of different substances, capturing participants' perceptions of the harm associated with substances like Fentanyl, Heroin, Cocaine, Meth, Marijuana, Nicotine, and Alcohol.

X_2, represents a binary variable indicating whether the substance depicted in the vignette is illegal in the participant's state.

X_3, represents the relationship type of the individual depicted in the vignette, coded as 1 when the individual is a cousin and 0 when the individual is a friend.

X_4, represents the participant's willingness to disclose his association with the individual depicted in the vignette.

V' is a vector comprising stigma indices, including the Social Distance Index, Public Stigma Index, and Stigma by Association Index. These indices capture participants' perceptions of public stigma towards individuals with addiction, their desire for social distance from such individuals, and the stigma associated with being associated with someone who has an addiction.

Z' is a vector representing participants' beliefs about the causes of addiction, consisting of two variables: "Addiction Has Internal Cause" and "Addiction Has External Cause." These variables reflect participants' perspectives on whether addiction is primarily attributed to internal factors or external factors.

K' is a vector describing participants' previous experiences with individuals who have struggled with addiction. It includes two variables: Previous Contact and Rate Contact. "Previous Contact" measures whether participants have had personal experiences with individuals who have struggled with substance abuse. "Rate Contact" measures participants' subjective ratings of their experiences with these individuals.

W' is a vector encompassing control variables that account for various factors influencing the dependent variable. These variables include participants' conservatism, religiousness, age, membership in a minority group, yearly household income, education level, gender, political party affiliation, and location.

ε_i represents the residual term, capturing unobserved factors that affect the dependent variable but are not accounted for by the model.

Results

The subsequent analysis comprises four distinct models, each focusing on different dimensions of social support. Model 1 examines the effects of the perceived risk of a drug and other predictors on the overall social support index. Model 2 analyzes focuses on instrumental support, while Model 3 focuses on informational support. Lastly, Model 4 examines emotional support. All models consider a comprehensive set of control variables, ensuring a robust analysis. These control variables include the participant's previous contact with individuals who struggled with addiction and their rating of that experience, their beliefs about addiction and recovery, their desire for social distance, their fear of association-related stigma, their perception of the causes of addiction (internal vs. external), their willingness to disclose their association with the individual depicted in the vignette, their minority status, conservatism, age, gender, yearly family income, education, political party affiliation, geographical region, and religiosity. By incorporating these control variables, we aim to account for potential confounding factors and provide a thorough examination of the multifaceted nature of social support dynamics within the context of addiction.

Table 25. Regression results for social support indexes.

	Dependent variables			
	Social Support	Instrumental Index	Informational Index	Emotional Index
Substance Risk Index	0.043**	0.048*	0.076***	0.007
	(0.021)	(0.028)	(0.027)	(0.027)
Illegal Drug	-0.013	-0.101	-0.121	0.184*
	(0.076)	(0.102)	(0.099)	(0.098)

Social Distance Index	-0.271***	-0.414***	-0.197***	-0.203***
	(0.040)	(0.053)	(0.051)	(0.051)
Public Stigma Index	-0.040	-0.071	-0.068	0.019
	(0.043)	(0.057)	(0.055)	(0.055)
Stigma by Assoc. Index	-0.017	0.0002	-0.013	-0.038
	(0.023)	(0.031)	(0.030)	(0.030)
Disclose Association	0.109***	0.136***	0.064	0.126***
	(0.036)	(0.049)	(0.047)	(0.047)
Previous Contact	-0.008	-0.038	-0.047	0.059
	(0.082)	(0.110)	(0.106)	(0.105)
Rate Contact	0.002	0.004	0.013	-0.012
	(0.019)	(0.025)	(0.024)	(0.024)
Addiction Has Internal Cause	-0.022	-0.028	-0.029	-0.009
	(0.033)	(0.044)	(0.042)	(0.042)
Addiction Has External Cause	0.056*	0.002	0.045	0.123***
	(0.032)	(0.043)	(0.041)	(0.041)
Addict Can Recover	0.131***	0.058	0.177***	0.158***
	(0.044)	(0.058)	(0.056)	(0.056)
Cousin	0.045	0.021	0.077	0.037
	(0.060)	(0.080)	(0.078)	(0.077)
Minority	0.094	0.122	0.178**	-0.019
	(0.065)	(0.087)	(0.084)	(0.084)
Male	-0.002	0.079	0.026	-0.111
	(0.061)	(0.081)	(0.078)	(0.078)
Age	0.002	0.002	-0.0002	0.003
	(0.002)	(0.003)	(0.003)	(0.003)
Yearly Family income	-0.016*	-0.028**	-0.007	-0.012
	(0.008)	(0.011)	(0.011)	(0.010)
Education	0.022	0.040	0.021	0.006
	(0.026)	(0.035)	(0.034)	(0.034)
Religious	0.176***	0.274***	0.205**	0.049
	(0.068)	(0.091)	(0.087)	(0.087)
Conservatism	0.008	0.013	0.028	-0.018
	(0.039)	(0.052)	(0.050)	(0.049)
Democrat	0.074	0.064	0.081	0.076

160

	(0.077)	(0.104)	(0.100)	(0.099)
Republican	0.104	0.089	0.115	0.109
	(0.089)	(0.119)	(0.115)	(0.114)
West	-0.013	-0.081	0.035	0.007
	(0.075)	(0.101)	(0.097)	(0.097)
Midwest	-0.035	-0.110	-0.030	0.036
	(0.088)	(0.117)	(0.113)	(0.112)
South	-0.044	-0.101	-0.083	0.053
	(0.088)	(0.118)	(0.114)	(0.113)
Constant	2.580^{***}	1.598	2.781^{**}	3.360^{***}
	(0.913)	(1.223)	(1.179)	(1.172)
Observations	239	239	239	239
R^2	0.553	0.532	0.393	0.396
Adjusted R^2	0.503	0.480	0.324	0.329
Residual Std. Error (df = 214)	0.438	0.586	0.565	0.562
F Statistic (df = 24; 214)	11.020^{***}	10.156^{***}	5.763^{***}	5.858^{***}

Note: $^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

The analysis unveiled a significant positive relationship between the " Substance Risk Index" and two dimensions of social support: "Overall Social Support" (coefficient = 0.043, p-value = 0.05) and "Informational Index" (coefficient = 0.076, p-value = 0.01). However, no significant association was found between the "Substance Risk Index" and the Instrumental and Emotional Indexes. These findings highlight the importance of individuals' perceptions of substance harm in influencing their inclination to provide social support, specifically in terms of offering information and overall support. The results suggest that when individuals perceive a substance to be more harmful, they are more likely to engage in behaviors that provide informational support. This may include sharing knowledge, resources, and guidance to help individuals facing addiction.

The results indicate a significant negative relationship between the "Social Distance Index" and the dependent variables: "Overall Social Support," "Instrumental Index," "Informational

Index," and "Emotional Index." The coefficients of -0.271, -0.414, -0.197, and -0.203 for the respective dependent variables suggest a notable impact. These coefficients are statistically significant at the p-value = 0.01 level. The findings suggest that a higher "Social Distance Index" is associated with reduced social support across all dimensions. This finding indicates that individuals who express a stronger preference for keeping their distance are less likely to provide support in terms of overall assistance, instrumental help, information, and emotional aid.

The analysis revealed a significant positive association of the variable "Disclose Association" on instrumental support (coefficient = 0.136, p-value = 0.01), emotional support (coefficient = 0.126, p-value = 0.05), and overall support (coefficient = 0.109, p-value = 0.01). These findings indicate that individuals who are more willing to disclose their association with the person described in the vignette are also more inclined to provide instrumental and emotional support. These results suggest that individuals who are less hesitant to disclose their association with the person in question are more likely to offer practical assistance and resources (instrumental support) as well as emotional understanding and empathy (emotional support). However, it is important to note that the variable "Disclose Association" did not show a significant effect on informational support.

The results indicate that the variable "Addict Can Recover" has a significant positive association on three of the dependent variables: informational support (coefficient = 0.177, p-value = 0.01), overall support (coefficient = 0.131, p-value = 0.01), and emotional support (coefficient = 0.158, p-value = 0.01). These findings suggest that individuals who hold the belief that individuals dealing with addiction can recover are more likely to provide support in terms of informational assistance, overall support, and emotional aid. The results underscore the importance of belief in recovery as a motivating factor in offering support to individuals struggling with

addiction. Individuals who have a positive view of an addict's potential for recovery demonstrate a greater inclination to provide various forms of support, including information and emotional understanding.

The analysis revealed a significant positive association between the variable "Addiction Has External Cause" and both the "Overall Social Support" and the "Emotional Support Index". Specifically, for the "Overall Social Support" variable, the coefficient is 0.056, and although marginally significant (p-value = 0.1), it suggests that individuals who perceive addiction as having an external cause are more likely to provide social support. Similarly, for the "Emotional Index" variable, the coefficient is 0.123, and the effect is statistically significant (p-value = 0.01), indicating that individuals with the belief in an external cause of addiction are more likely to offer emotional assistance. It is important to note, however, that the variable "Addiction Has External Cause" does not show a significant effect on the "Instrumental Index" and "Informational Index" variables. This suggests that the perception of addiction's external cause may not directly influence the provision of practical assistance and informational support.

The analysis revealed a significant negative association between the variable "Yearly Family Income" and both instrumental support and overall support. The coefficient for "Yearly Family Income" was -0.028, indicating a statistically significant effect (p-value = 0.05) on instrumental support. For overall support, the coefficient was -0.016, which is marginally significant (p-value = 0.1). These findings suggest that individuals from higher-income families are expected to provide less instrumental support and overall support to the individual described in the vignette. One possible explanation for these results could be the pairing of wealthier individuals with individual that use more harmful substances. Participants in the study may have been concerned about enabling or supporting potentially destructive behavior by providing

material assistance to individuals from higher-income families who are using more harmful substances. This cautionary approach may have influenced their decision to refrain from offering instrumental support, as they may have wanted to avoid inadvertently contributing to the individual's substance use.

The analysis revealed that participants who identified as religious were more likely to provide higher levels of support across all support dimensions. Specifically, the coefficient for the variable "Religious" was 0.179 (p-value = 0.01) for overall support, 0.274 (p-value = 0.01) for instrumental support, and 0.205 (p-value = 0.05) for informational support. These findings suggest that religious individuals are more inclined to offer practical assistance, share valuable information, and contribute to the overall support network for individuals facing addiction. These results underscore the potential role of religious beliefs and practices in fostering supportive environments, promoting well-being, and facilitating recovery among those in need. It is important to note that the other variables included in the analysis did not demonstrate statistically significant influence on any of the social support dimensions.

Discussion

Addiction studies have primarily focused on individuals dealing with addiction, but the crucial role of support providers has been overlooked. Family members, close friends, and long-term partners play a significant part in the recovery process of those facing addiction. This study aims to understand the perspectives of these support providers and investigate the factors influencing their support. Additionally, the study highlights how existing relationships, such as familial bonds and close friendships, can profoundly impact social support dynamics. Within familial, close friendships, or long-term partnerships, a forward-looking perspective is often

embraced, surpassing any perceived risks associated with engaging in supportive actions. This long-term viewpoint can also foster a sense of responsibility and determination to aid the individual's liberation from harmful substances.

Initially, the study sought to explore the influence of relationship type, participant attitudes toward addiction and recovery, and drug type on social support. However, due to challenges with the randomization process and resulting unbalanced group distributions, adjustments were made to the methodology. To address these issues, the substance risk index associated with each drug was used as a substitute for drug type. This variable captured substance-related differences and the inclusion of additional control variables in the model. The revised model was then used to investigate how the Substance Risk Index, participant attitudes, and other control variables influenced social support outcomes.

The analysis revealed a significant positive association between the substance risk index and informational support. When individuals perceive a substance to be more harmful, they are more likely to extend informational support, such as sharing knowledge, resources, and guidance, to those struggling with addiction-related challenges. This type of support plays a crucial role in promoting awareness and providing relevant information to individuals seeking help or coping with addiction issues. Surprisingly, relationship type was not found to be a significant predictor of social support, suggesting that the nature of the relationship, whether family or friend, may not directly impact the level of social support offered once other factors are considered.

The study also found a strong link between the desire for social distance and a significant decrease in support across all dimensions. This finding indicates that individuals who harbor a stronger preference for social distance with the person describe in the vignette are significantly less likely to offer support. Addressing and mitigating this desire for social distance is essential for

fostering a more supportive environment. The analysis of the data revealed a positive association between the desire for social distance and public stigma, highlighting the need to reduce public stigma to decrease the inclination toward social distance. On the other hand, beliefs regarding recovery were found to diminish social distance, indicating that having positive beliefs about the potential for recovery can help reduce the desire for social distance. Additionally, previous contact with individuals struggling with addiction and positive experiences with them were negatively correlated with the desire for social distance, suggesting that providing opportunities for contact and positive interactions with individuals facing addiction-related challenges could help alleviate the desire for social distance.

Moreover, the study found that individuals who are more willing to disclose their association with the person described in the vignette are more likely to provide instrumental and emotional support. This highlights the importance of creating a safe environment for disclosure of one's association with someone struggling with addiction. Encouraging individuals to share their experiences and connections can create an environment where supportive behaviors, particularly practical assistance and emotional aid, are more likely to occur in addiction contexts. The participant's attitudes toward addiction were another important predictor that influenced social support. Individuals who hold the belief that individuals dealing with addiction can recover are more likely to provide support in terms of information, overall assistance, and emotional understanding.

This finding highlights the impact of positive attitudes and beliefs regarding recovery on the willingness to extend various dimensions of support. Similarly, individuals who perceive addiction as having an external cause are more likely to offer social support in terms of emotional aid. However, this perception does not significantly influence instrumental support and

informational support. These findings shed light on the importance of belief systems and perceptions surrounding addiction. Holding a positive belief in the potential for recovery and recognizing external causes for addiction can shape individuals' attitudes and their inclination to provide support.

Additionally, participants from higher-income families were less likely to provide instrumental support and overall support to the individual depicted in the vignette. One possible explanation for this finding is the pairing of wealthier individuals with individuals using more harmful substances, which may lead to concerns among participants about enabling addictive behaviors. However, this hypothesis should be investigated further. Lastly, the study revealed a significant positive association between religiosity and support. Participants who identified as religious were more likely to provide practical assistance, share valuable information, and contribute overall support.

These findings align with previous research emphasizing the positive influence of religious beliefs and practices on social support provision (Hill et al., 2020; Krause et al., 2018). Religious individuals often hold values and beliefs that emphasize compassion, empathy, and helping others in need. Their religious teachings and practices may instill a sense of responsibility to help and support to individuals facing challenges, such as addiction. Additionally, the moral framework provided by religious teachings often emphasizes the importance of compassion and caring for others, motivating individuals to extend support to those in need, including individuals with substance addiction histories. This underscores the potential role of religiosity in fostering supportive environments and promoting recovery among those in need.

It is crucial to understand the underlying factors that contribute to stigma by association and the desire for social distance. By developing effective strategies to reduce these barriers,

interventions and programs can be designed to encourage individuals to overcome their hesitations and actively engage in supportive networks for individuals facing addiction. Active efforts to reduce public stigma through education, advocacy, and the promotion of empathy and understanding are essential. Additionally, facilitating personal contact and fostering positive experiences with individuals affected by addiction can help challenge stereotypes and diminish the desire for social distance.

This study significantly advances our comprehension of social support dynamics among individuals impacted by substance abuse. The findings illuminate the nuanced impact of substance abuse history on social support and emphasize the need to consider contextual factors and individual beliefs when investigating the dynamics of support provision. Tailored interventions targeting specific substances, addressing public stigma associated with addiction, and promoting education and socioeconomic opportunities show promise in bolstering social support networks and enhancing the well-being of those affected by substance abuse.

To address the challenges in providing support to individuals dealing with substance addiction, a comprehensive approach is necessary. Efforts should be directed towards combating public stigma and dispelling stigma by association through educational initiatives, awareness campaigns, and community-driven projects. Disseminating accurate information about addiction, emphasizing the potential for recovery, and nurturing empathy can effectively challenge negative perceptions and foster a culture of support. Creating secure and non-judgmental spaces where individuals can seek assistance without fearing stigma or social consequences is a fundamental step. By addressing these underlying factors and cultivating a supportive atmosphere, we can enhance the accessibility and efficacy of support for individuals grappling with drug addiction, ultimately facilitating their recovery and overall well-being.

Future research

Future vignette-based studies should consider including the demographics of individuals with a history of substance abuse. The available literature documenting the interactions between stigma, race, and gender suggests that various personal characteristics of former drug addicts have heterogeneous effects (van Olphen et al., 2009; Woo, 2017). Including demographic information can provide a more nuanced understanding of how these factors intersect and influence social support outcomes. Further research should also analyze whether these findings generalize to other stigmatized groups. To enhance the depth and breadth of knowledge on the topic, future research should consider employing longitudinal designs, diverse samples, and qualitative methods. Longitudinal studies can provide insights into the temporal dynamics of social support and substance abuse, allowing for the examination of how support networks evolve over time and their impact on recovery processes. Additionally, including diverse samples can help identify potential variations in social support experiences across different populations and contexts.

Qualitative research methods can offer a deeper understanding of the individual experiences and perceptions that shape social support outcomes. In-depth interviews, focus groups, or ethnographic approaches can capture the rich nuances of lived experiences and shed light on the contextual factors influencing social support behaviors. This qualitative exploration can complement quantitative findings and provide a more comprehensive understanding of the mechanisms underlying the observed associations. Lastly, the impact of religiosity in increasing the provision of assistance deserves further investigation. Future research should delve deeper into the mechanisms that link religiosity to increased support and clarify how religious beliefs and practices influence individuals' willingness to offer support.

Limitations

It is important to acknowledge the limitations of this study. The findings are based on self-reported data, which is susceptible to recall biases and social desirability effects. Future studies could consider employing additional measures, such as objective assessments or corroborative sources of data, to strengthen the reliability of the findings. Finally, it is important to note that the data used in this study was obtained through Connect, which is a convenience sample that may not fully represent the general US population. The composition of the Connect participants and their continuous involvement in various experiments can introduce biases and limitations to the generalizability of the results. Caution should be exercised when interpreting the findings in relation to the broader population.

References:

Adams, Z. W., Taylor, B. G., Flanagan, E., Kwon, E., Johnson-Kwochka, A. V., Elkington, K.
S., Becan, J. E., & Aalsma, M. C. (2021). Opioid Use Disorder Stigma, Discrimination, and
Policy Attitudes in a National Sample of U.S. Young Adults. *Journal of Adolescent Health*,
69(2), 321–328. https://doi.org/10.1016/j.jadohealth.2020.12.142

Alós-Ferrer, C., & Farolfi, F. (2019). Trust Games and Beyond. *Frontiers in Neuroscience*,
13(September), 1–14. https://doi.org/10.3389/fnins.2019.00887

Anderson, L. R., Mellor, J. M., & Milyo, J. (2006). Induced heterogeneity in trust experiments.
Experimental Economics, *9*(3), 223–235. https://doi.org/10.1007/s10683-006-9124-2

Ashraf, N., Bohnet, I., & Piankov, N. (2006). Decomposing trust and trustworthiness.
Experimental Economics, *9*(3), 193–208. https://doi.org/10.1007/s10683-006-9122-4

Baldwin, L. M. S. C. M. D. S. (2010). Job Loss Discrimination and Former Substance Use
Disorders. *Drug Alcohol Depend*, *23*(110), 1–7.
https://doi.org/10.1038/nature08365.Reconstructing

Bargh, J. A., & Williams, E. L. (2006). *The Automaticity of Social Life*.

Barrera, M., Sandier, I. N., & Ramsay, T. B. (1981). Preliminary Development of a Scale of
Social Support: Studies on College Students I. In *American Journal of Community
Psychology* (Vol. 9, Issue 4).

Birtel, M. D., Wood, L., & Kempa, N. J. (2017). Stigma and social support in substance abuse:
Implications for mental health and well-being. *Psychiatry Research*, *252*(c), 1–8.
https://doi.org/10.1016/j.psychres.2017.01.097

Brülhart, M., & Usunier, J. C. (2012a). Does the trust game measure trust? *Economics Letters*,
115(1), 20–23. https://doi.org/10.1016/j.econlet.2011.11.039

Brülhart, M., & Usunier, J. C. (2012b). Does the trust game measure trust? *Economics Letters*,

    115(1), 20–23. https://doi.org/10.1016/j.econlet.2011.11.039

Calabuig, V., Fatas, E., Olcina, G., & Rodriguez-Lara, I. (2016). Carry a big stick, or no stick at

    all: Punishment and endowment heterogeneity in the trust game. *Journal of Economic*

    Psychology, *57*, 153–171. https://doi.org/10.1016/j.joep.2016.09.006

Cañadas, E., Rodríguez-Bailón, R., & Lupiáñez, J. (2015). The effect of social categorization on

    trust decisions in a trust game paradigm. *Frontiers in Psychology*, *6*(OCT).

    https://doi.org/10.3389/fpsyg.2015.01568

Case, T., Gim, H., Gahler, H., & Harwood, J. (2021). For the love of music: Changing Whites'

    stereotypes of Asians with mediated intergroup musical contact. *Journal of International*

    and Intercultural Communication, *0*(0), 1–19.

    https://doi.org/10.1080/17513057.2021.1985590

Chaudhuri, A., & Gangadharan, L. (2007). An Experimental Analysis of Trust and

    Trustworthiness. In *Journal* (Vol. 73, Issue 4).

Chetty, R., Hofmeyr, A., Kincaid, H., & Monroe, B. (2021). The Trust Game Does Not (Only)

    Measure Trust: The Risk-Trust Confound Revisited. *Journal of Behavioral and*

    Experimental Economics , *90*. https://doi.org/10.1016/j.socec.2020.101520

Christie, N. C. (2021). The role of social isolation in opioid addiction. *Social Cognitive and*

    Affective Neuroscience, *16*(7), 645–656. https://doi.org/10.1093/scan/nsab029

Corrigan, P. W., Kuwabara, S. A., & O'Shaughnessy, J. (2009). The public stigma of mental

    illness and drug addiction: Findings from a stratified random sample. *Journal of Social*

    Work, *9*(2), 139–147. https://doi.org/10.1177/1468017308101818

Corrigan, P. W., Lurie, B. D., Goldman, H. H., Slopen, N., Medasani, K., & Phelan, S. (2005). How adolescents perceive the stigma of mental illness and alcohol abuse. *Psychiatric Services*, *56*(5), 544–550. https://doi.org/10.1176/appi.ps.56.5.544

Cox, J. C. (2004). How to identify trust and reciprocity. *Games and Economic Behavior*, *46*(2), 260–281. https://doi.org/10.1016/S0899-8256(03)00119-2

Crisp, A., Gelder, M., Goddard, E., & Meltzer, H. (2005). Stigmatization of people with mental illnesses: a follow-up study within the Changing Minds campaign of the Royal College of Psychiatrists. *World Psychiatry : Official Journal of the World Psychiatric Association (WPA)*, *4*(2), 106–113.

Dannatt, L., Ransing, R., Calvey, T., Scheibein, F., Saad, N. A., Shirasaka, T., Ramalho, R., Pant, S., Vadivel, R., Siste, K., Stowe, M. J., Kalita, K. N., Boujraf, S., Testa, R., Arya, S., Morgan, N., & Grandinetti, P. (2021). The Impact of Stigma on Treatment Services for People With Substance Use Disorders During the COVID-19 Pandemic—Perspectives of NECPAM Members. *Frontiers in Psychiatry*, *12*(March), 10–13. https://doi.org/10.3389/fpsyt.2021.634515

Dobkin, P. L., De Civita, M., Paraherakis, A., & Gill, K. (2002). The role of functional social support in treatment retention and outcomes among outpatient adult substance abusers. *Addiction*, *97*(3), 347–356. https://doi.org/10.1046/j.1360-0443.2002.00083.x

Dunkel-Schetter, C. , & S. L. A. (1990). Determinants of social support provision in personal relationships. *Journal of Social and Personal Relationships*, *7*(4), 437–450.

Eaton, K., Ohan, J. L., & Dear, G. (2015). The stigmatisation of the provision of services for alcohol and other drug users: A systematic literature review. *Drugs: Education, Prevention and Policy*, *22*(1), 19–25. https://doi.org/10.3109/09687637.2014.977230

Fairley, K., Sanfey, A., Vyrastekova, J., & Weitzel, U. (2016). Trust and risk revisited. *Journal of Economic Psychology*, *57*, 74–85. https://doi.org/10.1016/j.joep.2016.10.001

Feelemyer, J. P., Don C Des Jarlais, Kamyar Arasteh, Phillips, B. W., & Hagan, H. (2014). Changes in Quality of Life (WHOQOL-BREF) and Addiction Severity Index (ASI) among participants in Opioid Substitution Treatment (OST) in Low and Middle Income Countries: An International Systematic Review. *Drug Alcohol Depend.*, *1*(134), 1–17. https://doi.org/10.1016/j.earlhumdev.2006.05.022

Fiske, S. T. (2018). Stereotype Content: Warmth and Competence Endure. *Current Directions in Psychological Science*, *27*(2), 67–73. https://doi.org/10.1177/0963721417738825

Franke, M. L., Lersner, U. von, Essel, O. Q., Adorjan, K., Schomerus, G., Gómez-Carrillo, A., Tam Ta, T. M., Böge, K., Mobashery, M., Dettling, M., Diefenbacher, A., Angermeyer, M. C., & Hahn, E. (2019). The relationship between causal beliefs and desire for social distance towards people with schizophrenia and depression: Results from a survey of young Ghanaian adults. *Psychiatry Research*, *271*, 220–225. https://doi.org/10.1016/j.psychres.2018.11.030

Frenken, M., & Imhoff, R. (2022). Don't trust anybody: Conspiracy mentality and the detection of facial trustworthiness cues. *Applied Cognitive Psychology*, *April*, 1–10. https://doi.org/10.1002/acp.3955

Gambetta, D. (2000). Can We Trust Trust? In D. Gambetta (Ed.), *Trust: Making and Breaking Cooperative Relations* (pp. 213–237). University of Oxford. https://www.researchgate.net/publication/255682316

George, Darren., & Mallery, Paul. (2003). *SPSS for Windows Step by Step: A Simple Guide and Reference. 14.0 Update.* (4th ed.). Allyn & Bacon.

Granfield, R., & Cloud, W. (2001). Social context and "natural recovery": The role of social

    capital in the resolution of drug-associated problems. *Substance Use and Misuse*, *36*(11),

    1543–1570. https://doi.org/10.1081/JA-100106963

Hammersley, R., Reid, M., & Hammersley, R. (2002). Why the pervasive addiction myth is still

    believed. *Addiction Research and Theory*, *10*(1), 7–30.

    https://doi.org/10.1080/16066350290001687

Henderson, C., Evans-Lacko, S., & Thornicroft, G. (2013). Mental illness stigma, help seeking,

    and public health programs. *American Journal of Public Health*, *103*(5), 777–780.

    https://doi.org/10.2105/AJPH.2012.301056

Holm, H., & Nystedt, P. (2008). Trust in surveys and games - A methodological contribution on

    the influence of money and location. *Journal of Economic Psychology*, *29*(4), 522–542.

    https://doi.org/10.1016/j.joep.2007.07.010

House, J. S. (1981). *Work stress and social support*. Addison-Wesley Pub. Co.

Houser, D., Schunk, D., & Winter, J. (2010). Distinguishing trust from risk: An anatomy of the

    investment game. *Journal of Economic Behavior and Organization*, *74*(1–2), 72–81.

    https://doi.org/10.1016/j.jebo.2010.01.002

Hürriyetoğlu, Ali., Tanev, H., Yörük, E., & Zavarella, V. (2020). Workshop on Automated Event

    Extraction of Socio-political Events from News. In *Proceedings of the Workshop on*

    Automated Extraction of Socio-political Events from News 2020 (Issue May).

Johnson, N. D., & Mislin, A. A. (2011). Trust games: A meta-analysis. *Journal of Economic*

    Psychology, *32*(5), 865–889. https://doi.org/10.1016/j.joep.2011.05.007

Jorm, A. F., & Oh, E. (2009). Desire for social distance from people with mental disorders: a

    review. In *Australian and New Zealand Journal of Psychiatry* (Vol. 43).

Kilian, C., Manthey, J., Carr, S., Hanschmidt, F., Rehm, J., Speerforck, S., & Schomerus, G. (2021). Stigmatization of people with alcohol use disorders: An updated systematic review of population studies. *Alcoholism: Clinical and Experimental Research*, *45*(5), 899–911. https://doi.org/10.1111/acer.14598

Krause, N. (2016). Assessing Supportive Social Exchanges Inside and Outside Religious Institutions: Exploring Variations among Whites, Hispanics, and Blacks. *Social Indicators Research*, *128*(1), 131–146. https://doi.org/10.1007/s11205-015-1022-6

Lawrence, B. (2004). Stereotypes and stereotyping: A moral analysis. *Philosophical Papers*, *33*(3), 251–289.

Leung, H. T. T., & Wincenciak, J. (2019). Discrepancy between first impression and social description, and its effect on people's attitude. *Humanities and Social Sciences Reviews*, *7*(1), 11–18. https://doi.org/10.18510/hssr.2019.712

Link, B. G., & Phelan, J. C. (2017). Labeling and Stigma. *A Handbook for the Study of Mental Health: Social Contexts, Theories, and Systems*, 393–408. https://doi.org/10.1017/9781316471289.024

Li, P. (n.d.). *Social Support and Discrimination: The Experiences of Recovering Social Support and Discrimination: The Experiences of Recovering Heroin Addicts in Kunming, China Heroin Addicts in Kunming, China*. https://digitalcollections.sit.edu/isp_collection

Livingston, J. D., Milne, T., Fang, M. L., & Amari, E. (2012). The effectiveness of interventions for reducing stigma related to substance use disorders: A systematic review. *Addiction*, *107*(1), 39–50. https://doi.org/10.1111/j.1360-0443.2011.03601.x

Lloyd, C. (2013). The stigmatization of problem drug users: A narrative literature review. *Drugs: Education, Prevention and Policy*, *20*(2), 85–95. https://doi.org/10.3109/09687637.2012.743506

Luty, J., Umoh, O., & Nuamah, F. (2009). Effect of brief motivational interviewing on stigmatised attitudes towards mental illness. *Psychiatric Bulletin*, *33*(6), 212–214. https://doi.org/10.1192/pb.bp.108.020925

Mayer et al. (1995). An Integrative Model of Organizational Trust Author (s): Roger C . Mayer , James H . Davis and F . David Schoorman Published by : Academy of Management Stable URL : http://www.jstor.com/stable/258792 REFERENCES Linked references are available on JSTOR f. *Academy of Management Review*, *20*(3), 709–734.

McGinty, E. E., Goldman, H. H., Pescosolido, B., & Barry, C. L. (2015). Portraying mental illness and drug addiction as treatable health conditions: Effects of a randomized experiment on stigma and discrimination. *Social Science and Medicine*, *126*, 73–85. https://doi.org/10.1016/j.socscimed.2014.12.010

Milfeld, T., Haley, E., & Flint, D. J. (2021). A Fresh Start for Stigmatized Groups: The Effect of Cultural Identity Mindset Framing in Brand Advertising. *Journal of Advertising*, *50*(5), 603–621. https://doi.org/10.1080/00913367.2021.1913264

Muncan, B., Walters, S. M., Ezell, J., & Ompad, D. C. (2020). "they look at us like junkies": Influences of drug use stigma on the healthcare engagement of people who inject drugs in New York City. *Harm Reduction Journal*, *17*(1), 1–9. https://doi.org/10.1186/s12954-020-00399-8

Overton, J., Fretwell, M. D., & Dum, C. P. (2021). Who do you trust? College students'
attribution of stigma to peers with incarceration histories. *Journal of Experimental
Criminology*. https://doi.org/10.1007/s11292-021-09463-0

Perry, B. L. ;Bernice A. P. A. C. K. (2020). The unique nature of public stigma toward non-
medical prescription opioid use and dependence. *Addiction*, *115*, 23172326.

Perry, B. L., Pescosolido, B. A., & Krendl, A. C. (2020). The unique nature of public stigma
toward non-medical prescription opioid use and dependence: a national study. *Addiction*,
115(12), 2317–2326. https://doi.org/10.1111/add.15069

Practitioners, C. J., & Experience, L. (n.d.). *The Stigmatization of Justice-involved Individuals
with Substance Use Disorders*.

Pryor, J., B. Reeder, Glenn D. Monroe, & Andrew E. (2012). The infection of bad company.
Stigma by association. In *Journal of Personality and Social Psychology* (Vol. 102, Issue 2).

Putnam, R. D. (2000). *Bowling alone : the collapse and revival of American community*. Simon
& Schuster.

Radcliffe, P., & Stevens, A. (2008). Are drug treatment services only for "thieving junkie
scumbags"? Drug users and the management of stigmatised identities. *Social Science and
Medicine*, *67*(7), 1065–1073. https://doi.org/10.1016/j.socscimed.2008.06.004

Rao, H., Mahadevappa, H., Pillay, P., Sessay, M., Abraham, A., & Luty, J. (2009). A study of
stigmatized attitudes towards people with mental health problems among health
professionals. *Journal of Psychiatric and Mental Health Nursing*, *16*(3), 279–284.
https://doi.org/10.1111/j.1365-2850.2008.01369.x

Sapienza, P., Toldra-Simats, A., & Zingales, L. (2013a). Understanding trust. *Economic Journal*,
123(573), 1313–1332. https://doi.org/10.1111/ecoj.12036

Sapienza, P., Toldra-Simats, A., & Zingales, L. (2013b). UNDERSTANDING TRUST. In *Source: The Economic Journal* (Vol. 123, Issue 573).

Scheidell, J. D., Dyer, T. V., Hucks-Ortiz, C., Abrams, J., Mazumdar, M., Cleland, C., Irvine, N., Turpin, R. E., Severe, M., Mayer, K., & Khan, M. (2021). Characterisation of social support following incarceration among black sexual minority men and transgender women in the HPTN 061 cohort study. *BMJ Open*, *11*(9), 1–10. https://doi.org/10.1136/bmjopen-2021-053334

Sciences, S. (2016). Ending discrimination against people with mental and substance use disorders: The evidence for stigma change. In *Ending Discrimination Against People with Mental and Substance Use Disorders: The Evidence for Stigma Change*. https://doi.org/10.17226/23442

Semple, S. J., Grant, I., & Patterson, T. L. (2005). Utilization of drug treatment programs by methamphetamine users: The role of social stigma. *American Journal on Addictions*, *14*(4), 367–380. https://doi.org/10.1080/10550490591006924

Simonds, R., Reisig, M. D., Trinkner, R., & Holtfreter, K. (2021). The effect of prior incarceration on trust and social support: results from two factorial vignette studies. In *Journal of Offender Rehabilitation* (Vol. 60, Issue 7, pp. 464–484). https://doi.org/10.1080/10509674.2021.1966154

Tang, Y., & Gong, Z. (2023). Trust game, survey trust, are they correlated? Evidence from China. *Current Psychology*, *February*. https://doi.org/10.1007/s12144-023-04448-w

Troup, L. J., Erridge, S., Ciesluk, B., & Sodergren, M. H. (2022). Perceived Stigma of Patients Undergoing Treatment with Cannabis-Based Medicinal Products. *International Journal of Environmental Research and Public Health*, *19*(12). https://doi.org/10.3390/ijerph19127499

Uscinski, J. E., Klofstad, C., & Atkinson, M. D. (2016). What Drives Conspiratorial Beliefs? The

    Role of Informational Cues and Predispositions. *Political Research Quarterly*, *69*(1), 57–

    71. https://doi.org/10.1177/1065912915621621

Van Boekel, L. C., Brouwers, E. P. M., Van Weeghel, J., & Garretsen, H. F. L. (2013). Stigma

    among health professionals towards patients with substance use disorders and its

    consequences for healthcare delivery: Systematic review. *Drug and Alcohol Dependence*,

    131(1–3), 23–35. https://doi.org/10.1016/j.drugalcdep.2013.02.018

van Olphen, J., Eliason, M. J., Freudenberg, N., & Barnes, M. (2009). Nowhere to go: How

    stigma limits the options of female drug users after release from jail. *Substance Abuse:*

    Treatment, Prevention, and Policy, *4*, 1–10. https://doi.org/10.1186/1747-597X-4-10

Vilsaint, C. L., Hoffman, L. A., & Kelly, J. F. (n.d.). *Perceived discrimination in addiction*

    recovery: Assessing the prevalence, nature, and correlates using a novel measure in a U.S.

    National sample HHS Public Access. https://doi.org/10.1016/j.drugalcdep

Vilsaint, C. L., Hoffman, L. A., & Kelly, J. F. (2020). Perceived discrimination in addiction

    recovery: Assessing the prevalence, nature, and correlates using a novel measure in a U.S.

    National sample. *Drug and Alcohol Dependence*, *206*, 1–19.

    https://doi.org/10.1016/j.drugalcdep.2019.107667

Woo. (2017). 乳鼠心肌提取 HHS Public Access. *Physiology & Behavior*, *176*(1), 139–148.

Wurtele, S. K., & Maruyama, L. (2013). Changing Studentsâ€™ Stereotypes of Older Adults.

    Teaching of Psychology, *40*(1), 59–61. https://doi.org/10.1177/0098628312465867

Appendix 3A: Social Support & Substance Risks

Table 26. Balance table by substance for individuals depicted as friend (part I).

Group	Male	Female	Education	Democrat	Republican	Independent
Control	56.25%	43.75%	5 (Mo)	18.75%	31.25%	50.00%
Fentanyl	66.67%	33.33%	7 (Mo)	26.67%	33.33%	33.33%
Heroin	60.00%	40.00%	7 (Mo)	40.00%	6.67%	46.67%
Cocaine	53.85%	46.15%	7 (Mo)	53.85%	23.08%	23.08%
Meth	46.67%	53.33%	7 (Mo)	46.67%	26.67%	20.00%
Marijuana	53.33%	46.67%	8 (Mo)	40.00%	26.67%	33.33%
Nicotine	45.45%	54.55%	7 (Mo)	41.67%	8.33%	50.00%
Alcohol	60.00%	40.00%	7 (Mo)	26.67%	26.67%	46.67%

Table 27. Balance table by substance for individuals depicted as friend (part II).

Group	Age (avg.)	Income	White	Black	Asian	Native American
Control	49.25	4 (Mo)	62.50%	31.25%	0.00%	6.25%
Fentanyl	36.33	12 (Mo)	60.00%	26.67%	13.33%	0.00%
Heroin	41.07	7 (Mo)	66.67%	26.67%	6.67%	0.00%
Cocaine	44.69	9 (Mo)	61.54%	30.77%	7.69%	0.00%
Meth	40.20	7 (Mo)	53.33%	33.33%	13.33%	0.00%
Marijuana	38.93	11 (Mo)	64.29%	14.29%	21.43%	0.00%
Nicotine	39.67	4 (Mo)	66.67%	16.67%	16.67%	0.00%
Alcohol	41.80	4 (Mo)	60.00%	26.67%	13.33%	0.00%

Table 28. Balance table by substance for individuals depicted as cousin (part I).

Group	Male	Female	Education	Democrat	Republican	Independent
Control	62.50%	37.50%	5	31.25%	43.75%	25.00%
Fentanyl	37.50%	62.50%	7	50.00%	31.25%	18.75%
Heroin	64.29%	35.71%	7	42.86%	35.71%	21.43%
Cocaine	75.00%	25.00%	7	37.50%	37.50%	25.00%
Meth	50.00%	50.00%	7	50.00%	21.43%	28.57%
Marijuana	62.50%	37.50%	7	37.50%	25.00%	37.50%
Nicotine	60.00%	40.00%	7	26.67%	26.67%	40.00%
Alcohol	56.25%	43.75%	5	37.50%	31.25%	31.25%

Table 29. Balance table by substance for individuals depicted as cousin (part II).

Group	Age (avg.)	Income	White	Black	Asian	Native American
Control	43.50000	11	68.75%	18.75%	12.50%	0.00%
Fentanyl	44.12500	4	81.25%	12.50%	6.25%	0.00%
Heroin	43.78571	7	57.14%	21.43%	21.43%	0.00%
Cocaine	43.50000	4	75.00%	12.50%	6.25%	6.25%
Meth	41.78571	4	64.29%	14.29%	21.43%	0.00%
Marijuana	43.93750	8	62.50%	25.00%	6.25%	6.25%
Nicotine	44.26667	5	66.67%	20.00%	13.33%	0.00%
Alcohol	38.12500	5	68.75%	18.75%	12.50%	0.00%

Table 30. Regression using drugs as predictors.

	Dependent variables			
	Social Support	Instrumental	Informational	Emotional
Fentanyl	0.301**	0.272*	0.372**	0.260*
	(0.117)	(0.156)	(0.152)	(0.151)
Heroin	0.157	0.082	0.158	0.232
	(0.118)	(0.157)	(0.152)	(0.151)
Cocaine	0.140	0.240	0.086	0.095
	(0.119)	(0.158)	(0.154)	(0.152)
Meth	0.234*	0.125	0.303*	0.272*
	(0.120)	(0.160)	(0.155)	(0.154)
Marijuana	0.262**	0.321**	0.344**	0.121
	(0.115)	(0.153)	(0.149)	(0.147)
Nicotine	0.143	0.331**	0.142	-0.044
	(0.120)	(0.160)	(0.156)	(0.154)
Alcohol	0.162	0.275*	0.222	-0.011
	(0.115)	(0.153)	(0.149)	(0.148)
Social Distance Index	-0.271***	-0.400***	-0.202***	-0.212***
	(0.040)	(0.054)	(0.052)	(0.052)
Public Stigma Index	-0.043	-0.072	-0.072	0.013
	(0.044)	(0.058)	(0.057)	(0.056)
Stigma by Assoc. Index	-0.018	-0.0005	-0.015	-0.039
	(0.023)	(0.031)	(0.030)	(0.030)
Disclose Association	0.106***	0.146***	0.059	0.115**
	(0.037)	(0.049)	(0.048)	(0.048)
Previous Contact	-0.015	-0.040	-0.055	0.051
	(0.083)	(0.111)	(0.108)	(0.107)
Rate Contact	0.006	0.009	0.020	-0.012
	(0.019)	(0.025)	(0.024)	(0.024)
Addiction Has Internal Cause	-0.019	-0.031	-0.019	-0.006
	(0.033)	(0.044)	(0.043)	(0.043)
Addiction Has External Cause	0.061*	0.005	0.055	0.122***
	(0.032)	(0.042)	(0.041)	(0.041)
Addict Can Recover	0.138***	0.079	0.184***	0.150***

	(0.044)	(0.059)	(0.057)	(0.057)
Cousin	0.056	0.026	0.100	0.042
	(0.060)	(0.080)	(0.078)	(0.077)
Minority	0.105	0.140	0.199**	-0.025
	(0.066)	(0.087)	(0.085)	(0.084)
Male	0.004	0.074	0.028	-0.089
	(0.061)	(0.081)	(0.079)	(0.078)
Age	0.002	0.002	0.001	0.003
	(0.002)	(0.003)	(0.003)	(0.003)
Yearly Family income	-0.016**	-0.026**	-0.009	-0.014
	(0.008)	(0.011)	(0.011)	(0.011)
Education	0.021	0.029	0.022	0.013
	(0.027)	(0.036)	(0.035)	(0.035)
Religious	0.179***	0.275***	0.206**	0.055
	(0.068)	(0.091)	(0.088)	(0.087)
Conservatism	0.0001	0.020	0.010	-0.030
	(0.039)	(0.052)	(0.051)	(0.050)
Democrat	0.061	0.074	0.054	0.054
	(0.079)	(0.105)	(0.102)	(0.101)
Republican	0.120	0.098	0.143	0.119
	(0.090)	(0.120)	(0.117)	(0.116)
West	-0.033	-0.114	0.009	0.005
	(0.077)	(0.102)	(0.100)	(0.099)
Midwest	-0.036	-0.098	-0.039	0.028
	(0.088)	(0.118)	(0.114)	(0.113)
South	-0.039	-0.120	-0.072	0.075
	(0.089)	(0.119)	(0.115)	(0.114)
Constant	2.576***	1.465	2.796**	3.468***
	(0.928)	(1.235)	(1.200)	(1.190)
Observations	239	239	239	239
R^2	0.558	0.544	0.399	0.405
Adjusted R^2	0.497	0.480	0.315	0.322
Residual Std. Error (df = 209)	0.440	0.586	0.569	0.565
F Statistic (df = 29; 209)	9.113***	8.589***	4.780***	4.900***

Note: *p<0.1; **p<0.05; ***p<0.01

Appendix 3B: Social Support Vignettes

In the next page, you will receive a hypothetical scenario and will be asked some questions. Please proceed to the next page.

Experiment´s Vignette

You recently spent time with [a friend from your childhood (Control Condition) or your cousin (Experimental Condition)] who told you that he's going through a rough patch in his life. You and your (friend or cousin) haven't been close in recent years, but you have good memories of spending time together as kids. [However, you also know that he [has struggled with fentanyl| heroin |meth | cocaine | marijuana | alcohol| nicotine abuse and was in rehabilitation. (Experimental Condition)]. He asks if you'd help him get out of this rough patch.

Survey Questions for Social Support Experiment

In a scale of 1 to 5, how likely would you be to:

1. Loan him money?

2. Help him find a job?

3. Help him find a place to live?

4. Introduce him to your friends?"

5. Give him advice"?

6. Counsel him about his life goals?

7. Tell him about opportunities, like someone who is looking for a roommate?

8. Provide him with information about available social services, like job training?

9. Provide him with a listening ear?

10. Give him a hug?

11. Take him to do something fun?

12. Set your feelings aside when talking to him, even if he frustrates you?

Public Stigma

In a scale of 1 to 5, how much do you agree with these statements:

1. People with a history of substance abuse are often unreliable and unpredictable.

2. I feel uncomfortable around people who have struggled with substance abuse in the past.

3. People with a history of substance abuse are a burden on society.

4. I believe that people with a history of substance abuse are more likely to engage in criminal behavior.

5. I would be hesitant to hire someone with a history of substance abuse.

6. People with a history of substance abuse are not capable of fully recovering and leading a productive life.

Stigma by association

In a scale of 1 to 5,

1. How comfortable would you feel being seen with this person in public?

2. How concerned would you be that others might judge you negatively if they knew you associated with this person?

3. Would you be worried that being seen with this person might damage your own reputation?

4. Would you avoid social situations where this person is present to avoid being associated with them?

5. How likely would you be to disclose your association with this person to others?

Desire for Social Distance

On a scale of 1-5, Please rate your level of comfort in the following scenarios with "The Receiver":

1. Attending a social event together

2. Working on a project together

3. Traveling together

4. Sharing a living space together

5. Participating in a recreational activity together

Risk associated with drugs

Please rate the following statements on a scale of 1 to 5, where 1 means "strongly disagree" and 5 means "strongly agree":

1. I perceive [fentanyl/heroin/meth/cocaine/marijuana/alcohol/nicotine] as harmful.

2. Using [fentanyl/heroin/meth/cocaine/marijuana/alcohol/nicotine] impairs a person's ability to function normally.

3. It is likely for someone to become addicted to [drug] after using it.

4. [fentanyl/heroin/meth/cocaine/marijuana/alcohol/nicotine] can cause harm to a person's physical health.

5. [fentanyl/heroin/meth/cocaine/marijuana/alcohol/nicotine] can cause harm to a person's mental health.

6. I associate [fentanyl/heroin/meth/cocaine/marijuana/alcohol/nicotine] with criminal activity to some extent.

Previous Contact

1. Have you had previous interactions with someone who has a history of substance abuse?

2. If you answered "yes" to the previous question, please rate your experience on a scale of 1 to 5, with 1 being very negative and 5 being very positive.

3. Do you know anyone who has experienced or is currently struggling with substance abuse?" Select all that apply.

    a. Yes, a family member.

    b. Yes, a friend.

    c. Yes, a coworker.

    d. No, I don't know anyone who has experienced or is currently struggling with substance abuse.

Locus of Control

In a scale of 1 to 5,

1. To what extent do you believe that a person's substance abuse problem is caused by their own choices?

2. To what extent do you believe that a person's substance abuse problem is caused by external factors such as their environment or societal factors?

Stability

1. To what extent do you believe that a person's substance abuse problem is a stable characteristic of their personality?

2. To what extent do you believe that a person's substance abuse problem can change over time?

Controllability

1. To what extent do you believe that a person's substance abuse problem is within their control?

2. To what extent do you believe that a person's substance abuse problem can be managed with appropriate support and treatment?

Responsibility

1. To what extent do you believe that a person is to blame for their substance abuse problem?

2. To what extent do you believe that a person is accountable for seeking help for their substance abuse problem?

Chapter 5. Conclusion

This dissertation focused on analyzing various factors influencing trust and social support toward individuals with a history of substance abuse. The three separate articles provided valuable insights into the psychological aspects shaping trust dynamics and cooperation towards this population. Notably, the research highlighted the negative influence of stereotypes on trust and cooperation, emphasizing the need to address these biases to reduce discrimination, and promote cooperation. The first paper investigated the impact of addiction histories on distrust and social support. The study found that depicting individuals in a positively light mitigated initial distrust towards individuals with substance abuse histories.

However, it was observed that individuals harboring high conspiratorial predisposition exhibited diminished levels of trust subsequent to the intervention. This underscores the complexities inherent in tackling deeply rooted biases and changing attitudes within distinct populations. Additionally, individuals with substance abuse histories received less informational support from their family, pointing to potential social barriers faced by this vulnerable population. These findings underscore the need for tailored interventions to address particular biases and promote comprehensive support from family and friends.

In the second paper, participants' awareness of a partner's substance abuse history significantly influenced their expectations of reciprocity within a trust game. However, interventions that highlighted positive attributes, such as academic achievements and community service leadership, positively influenced trust perceptions and perceived trustworthiness of partners. The mediating role of perceived warmth underscored its importance in fostering positive social outcomes. These results emphasize the potential of targeted interventions in reshaping

attitudes, combatting stigma, and creating a more supportive and inclusive environment for individuals grappling with addiction or in recovery.

The third paper delved into the provision of social support for individuals with substance abuse histories, considering various factors that influence support dynamics. Perceived substance risks positively correlated with the provision of informational support, while beliefs about potential recovery and attributing external causes to addiction enhanced emotional and informational support. Religiosity and willingness to disclose association with individuals struggling with addiction also played significant roles in providing support. Conversely, a desire for social distance negatively impacted all dimensions of social support. These findings highlight the importance of fostering disclosure and building supportive networks to enhance social support for individuals facing addiction-related challenges.

Overall, this dissertation contributes valuable insights to understanding trust dynamics and cooperation among individuals with diverse substance abuse histories. The results demonstrate the potential of interventions that highlight positive attributes for reducing stigma and cultivating an environment that fosters heightened trust and support. However, they also highlight the challenges of addressing ingrained biases and the importance of tailoring interventions to address individual needs. Looking ahead, several avenues for future research present themselves. Firstly, incorporating heterogeneous populations in trust game experiments can help identify potential variations in trust behavior across different groups, allowing for a more comprehensive understanding of how trust operates in diverse social contexts.

Moreover, delving deeper into the underlying mechanisms of trust formation and maintenance, including factors like prosocial preferences and perception of deservingness, can enrich our knowledge and inform the design of more effective interventions. Additionally,

exploring the role of individuating information in shaping trust perceptions and examining the long-term effects of trust interventions represent promising avenues for future research. Understanding the lasting impacts of trust-building interventions can provide critical insights into the sustainability of efforts to promote trust and cooperation among individuals with a history of substance abuse.

In conclusion, this dissertation significantly contributes to our understanding of trust and trustworthiness in the context of individuals with a history of substance abuse. By addressing stereotypes, designing targeted interventions, and fostering supportive environments, it paves the way for creating more trusting and supportive social interactions. Future research can continue advancing our knowledge of trust dynamics by incorporating diverse populations, investigating underlying mechanisms, and exploring the efficacy of various interventions, ultimately contributing to the development of impactful programs that promote trust and support for individuals grappling in addiction or in recovery.