

Differences in Perceived Threat and Efficacy in Managing Opioid Use Disorder versus Alcohol Use Disorder

Vaishnavi Tata, Zahra Majd, Ashna Talwar, Shweta Bapat, Austin De La Cruz, James E. Essien & J. Douglas Thornton

To cite this article: Vaishnavi Tata, Zahra Majd, Ashna Talwar, Shweta Bapat, Austin De La Cruz, James E. Essien & J. Douglas Thornton (2023): Differences in Perceived Threat and Efficacy in Managing Opioid Use Disorder versus Alcohol Use Disorder, Substance Use & Misuse, DOI: 10.1080/10826084.2023.2212075

To link to this article: <https://doi.org/10.1080/10826084.2023.2212075>



View supplementary material [↗](#)



Published online: 04 Jun 2023.



Submit your article to this journal [↗](#)



View related articles [↗](#)





View Crossmark data [↗](#)

ORIGINAL ARTICLE



Differences in Perceived Threat and Efficacy in Managing Opioid Use Disorder versus Alcohol Use Disorder

Vaishnavi Tata^{a,b} , Zahra Majd^a, Ashna Talwar^a, Shweta Bapat^{a,b}, Austin De La Cruz^b , James E. Essien^a and J. Douglas Thornton^{a,b}

^aCollege of Pharmacy, Department of Pharmaceutical Health Outcomes and Policy, University of Houston, College of Pharmacy, Houston, Texas, USA; ^bPrescription Drug Misuse and Education Research (PREMIER) Center, University of Houston College of Pharmacy, Houston, Texas, USA

ABSTRACT

Background: Efforts to increase the availability of Medication Assisted Treatment for alcohol use disorder (AUD) and opioid use disorder (OUD) may be futile if patients lack motivation for recovery and are unwilling to seek treatment. **Objectives:** In this cross-sectional, online survey, we used the Extended Parallel Process Model (EPPM) to assess how participants at risk of AUD or OUD react to their perceived threat and assess their response to pharmacotherapy as a potential treatment. EPPM constructs were assessed using the Risk Based Diagnosis Scale. Descriptive statistics measure the proportion of treated vs untreated participants. Untreated participants were sorted into one of three groups categorizing perceived threat – low threat appraisal, and danger or fear control. **Results:** Of 411 total responses, most ($n=293[71.29\%]$) sorted into the AUD cohort and 118(28.71%) into the OUD cohort. Overall, 104(25.30%) had received treatment and 307(74.70%) didn't. Within the OUD cohort, there were 67 untreated participants – 16(23.88%) exhibited low threat appraisal, 13(19.40%) were likely to undergo fear control, and 38(56.72%) were likely to undergo danger control. Within the AUD cohort, there were 240 untreated participants – 75(31.25%) exhibited low threat appraisal, 100(41.67%) were likely to experience fear control, and 65(27.08%) were likely to experience danger control. Participants in the OUD cohort were more likely to undergo danger control than those in the AUD cohort ($\chi^2=19.26, p<0.05$). **Conclusions:** This study identified perceived threat and efficacy when an individual was at risk of a SUD, but more insight into potential early interventions is needed – particularly in those individuals with polysubstance use disorder.

KEYWORDS

Extended Parallel Process Model; Alcohol Use Disorder; Opioid Use Disorder; Substance Use Disorder; Substance Misuse

Introduction

According to the 2019 results of the National Survey on Drug Use and Health (NSDUH), there are over 14.5 million people aged 12 or older diagnosed with an alcohol use disorder (AUD) and 1.6 million people, aged 12 or older, diagnosed with an opioid use disorder (OUD) in the United States.(Substance Abuse & Mental Health Services Administration, 2020) AUD represents the most common type of substance use disorder (SUD), and OUD has been declared a public health emergency by the United States Department of Health and Human Services (HHS).(Substance Abuse & Mental Health Services Administration, 2020; United States Department of Health & Human Services, 2017) The Substance Abuse and Mental Health Services Administration has continued to push for the increase in medication assisted treatment (MAT) for both AUD and OUD.(Jones, 2018; Substance Abuse & Mental Health Services Administration, 2015a) While there is no lack of effort to alleviate the nationwide opioid epidemic from a

healthcare standpoint, these efforts may be futile if patients are unwilling or unable to seek treatment due to patient specific factors.

Research on the utilization of treatment services often focuses on the issue of accessibility.(Ali et al., 2017; Priester et al., 2016; Wu et al., 2016) This line of research assumes that improving the accessibility of treatment services will result in an increased utilization of these services. While this assumption may hold for other disease states, it may not for patients with SUDs due to both the stigma surrounding substance dependence (Abraham et al., 2018; Thornton et al., 2017; Wilson et al., 2013) and the comorbidity complications of mental illness in this population. (Buckley & Brown, 2006; Friesen & Kurdyak, 2020; Novak et al., 2019) The NSDUH reports information on whether patients with a SUD receives treatment, as well as if they perceive a need for it.(Substance Abuse & Mental Health Services Administration, 2020) Substance use treatment refers to treatment or counseling received for alcohol or illicit drug use or for medical problems associated with the

use of alcohol or illicit drugs.(Substance Abuse & Mental Health Services Administration, 2020) Of the 21.6 million people who needed substance use treatment in 2019, only 4.2 million people received any form of treatment—psychological or pharmacological.(Jones, 2018) When assessing perceived need among the 18.9 million people who did not receive treatment, it was found that 18.1 million people did not perceive the need for it and only 236,000 did perceive a need for treatment, but were unsuccessful in their attempts to seek it.(Substance Abuse & Mental Health Services Administration, 2020) This suggests that while accessibility of treatment services is an ongoing problem, there may be a larger issue of personal beliefs surrounding substance use treatment that lead to individuals not perceiving a need for treatment. As a result of their beliefs, these patients may not undergo treatment, even if the treatment is accessible to them. This study aimed to explore why some patients do not perceive the need for treatment with the overarching goal of designing interventions to promote treatment services utilization among this population.

While the body of research on those with an SUD who do not wish to undergo treatment is limited, prior studies using the transtheoretical model of health behavior shows that there are two main reasons why patients refuse treatment in most disease states—the belief that their condition is not severe enough to warrant treatment or the belief that treatment would not work for them. (Dubé et al., 2015; Parker & Tobin, 2001; Prochaska, 2008; Rapp et al., 2006) In the case of SUD, the stigma surrounding addiction and the intersectionality of mental illness in this population can exacerbate or warp perceptions of their dependence as well as their understanding of treatment. For this reason, studies specifically designed to evaluate the beliefs that patients have regarding their health status and treatment options are crucial in promoting the utilization of treatment services.

The Extended Parallel Process Model (EPPM) is a theoretical framework that aims to understand the various cognitive processes individuals undergo when faced with a “threat” to their well-being.(Witte, 1992) It explains how these cognitive appraisals interpret a potential threat to culminate in a behavioral response.(Witte, 1992) Within the EPPM, threats and potential solutions are presented in the form of “fear appeals.”(Witte, 1992) Fear appeals are defined as “a persuasive message designed to both create and alleviate the emotion of fear in audience members.”(Dillard et al., 2017; Roberto et al., 2018) They consist of a threat to the individual that increases their fear, but then alleviating the fear by introducing an intervention geared to mitigate the threat.(Dillard et al., 2017; Roberto et al., 2018) In the case of the SUD population, a fear appeal would consist of telling a patient they may have a SUD, explaining the negative impact of substance dependence on daily life, and then reviewing treatment options for SUD.

The EPPM suggests that there are two levels of cognitive appraisal, threat appraisal and efficacy appraisal, which are involved in the assessment of a fear appeal.(Roberto et al., 2019) Threat appraisal explores an individual’s perception of their susceptibility to the threat and their understanding of the severity of the threat. If the individual believes that they

are not susceptible to the threat or that the threat is not severe enough to disrupt their daily activities, then they will perceive it as a low threat. Low perceived threat results in a termination of the cognitive process and no further behavioral action is taken. Conversely, a high threat appraisal means the individual does believe that this threat will harm their well-being and will proceed to efficacy appraisal. Efficacy appraisal consists of evaluating the potential effectiveness of a recommended treatment (response efficacy) and the individual’s own belief in their ability to seek and carry out the treatment (self-efficacy). At the end of this phase, a person will exhibit either high efficacy or low efficacy. If the patient does not believe the proposed treatment to be effective or does not believe they can successfully adhere to the treatment, they will exhibit low efficacy.(Cho & Witte, 2005; Witte, 1992) High threat appraisal combined with low efficacy appraisal means a patient believes themselves to be at risk, but do not believe they can alleviate it. This results in the initiation of fear control processes, which aim to alleviate fear or anxiety, but do not address the actual threat at hand.(Collaborative, 2014) Individuals engaging in fear control processes may be in denial of the threat or even exhibit risky behaviors to avoid dealing with the threat.(Cho & Witte, 2005; Roberto et al., 2019; Witte, 1992) In contrast, those who believe the recommended treatment to be effective in alleviating the threat and their own self-efficacy to carry out the treatment exhibit high efficacy.(Witte, 1992) These individuals believe themselves to be at risk, but also believe that the recommended treatment can mitigate the threat. High threat appraisal and high efficacy appraisal culminates in danger control processes—actions geared toward protective measures to avoid or reduce the threat.(Witte, 1992)

In the context of this study, the “threat” that participants were at risk of was either an AUD or OUD and the fear appeal consisted of a recommendation for both standard pharmacological and psychological interventions used to treat either SUD. This study’s objective was to apply the EPPM framework to a group of participants who exhibited signs of either an AUD or OUD and evaluate their level of perceived threat and perceived efficacy to identify potential reasons why patients with an SUD may not perceive the need for treatment. The findings from this study would fill a gap in knowledge regarding why some patients may not attempt to seek treatment even if accessible to them.

Methods

Study design

In this study, we used a cross-sectional, online survey among an anonymous, nation-wide sample of 411 respondents who exhibited signs of either an OUD or AUD in November 2019. This study was reviewed and approved by the University of Houston Institutional Review Board.

Sample recruitment and recruitment

The sample was identified by Qualtrics®, a data collection and management company that provides a platform for

online surveys and specializes in data collection. Qualtrics® recruits participants from various sources, including website intercept recruitment, member referrals, targeted email lists, gaming sites, customer loyalty web portals, permission-based networks, and social media, etc. As a result of their diverse recruitment procedure, some participants may have been offered an incentive in the form of SkyMiles, points toward retail purchases, or others on behalf of Qualtrics®. No incentive was offered by the research team themselves.

If participants followed the anonymous link in the recruitment materials, the first screen of the survey was the informed consent. This page detailed the purpose of this study and the risks and potential benefits of the work conducted. Information regarding contact information for the research team was also provided. Once participants consented to be a part of the study, they were taken to the screening criteria. The screening criteria asked participants to self-report their age and their exposure to alcohol and opioid medications. If a participant indicated that they had never consumed alcohol or taken an opioid medication, then the survey was terminated for them, thereby excluding them from participating in the study. Participants under the age of 18 were also excluded.

The next section of the screening criteria presented respondents with the DSM-V criteria for either AUD or OUD depending on their responses to the questions about their exposure to alcohol and opioid medications in the previous section. If the participant indicated that they had been on an opioid medication, but did not consume alcohol, then they were presented with the DSM-V criteria for an OUD.(American Psychiatric Association, 2013) Conversely, if a person had never taken an opioid medication, but did consume alcohol, then they were only presented with the DSM-V criteria for AUD. A person who indicated exposure to both were presented with the 11 DSM-V criteria for AUD and OUD and asked to self-report how many criteria they met in the past year.(Hopwood et al., 2018) Only participants who indicated that they experienced at least two of the 11 DSM-V criteria continued to the rest of the survey, as this would meet the threshold for a mild SUD.(American Psychiatric Association, 2013) Participants who met the criteria for AUD or OUD were sorted into their respective cohorts. The two cohorts were asked the same questions for the remainder of the survey, with the only difference in them being whether they said “AUD” or “OUD” in the question stem.

While developing the screening portion of the survey, two issues came to light. First, the strong likelihood of capturing more respondents at risk for AUD than those at risk for OUD, given the increased prevalence of AUD. (Substance Abuse & Mental Health Services Administration, 2020) Second, the possibility of co-occurring OUD and AUD. The first issue was resolved by having the panel provider, Qualtrics®, placed a “cap” of 300 on the number of AUD responses collected. The second issue was resolved by sorting patients with co-occurring SUDs into either the AUD or OUD cohort based on severity. The DSM-V categorizes selection of 2–3 criteria as indicative of a SUD with mild severity, 4–5 behaviors as moderate severity, and 6+

behaviors as a severe SUD.(American Psychiatric Association, 2013) In the event that they were equally severe (indicated the same number of items) for both AUD and OUD, they were sorted into the OUD cohort, since there were expected to be fewer people who met the criteria for OUD.

Lastly, the data collection provider, Qualtrics®, also set some exclusion criteria to ensure the quality of the responses collected by their platform. Respondents that spent less than a minute on the survey as well as “straight-line” respondents—those who indicated the same answer for every question—were excluded from the study. The research team members asked for participants with incongruent responses to be excluded as well. Incongruent responses refer to those that indicated that they had all of the possible health insurance options—including no insurance—as well as those who said they had not received any pharmacotherapy for their SUD, but then later reported being treated with multiple medications.

Ultimately, after excluding for quality responses, only participants who were aged 18 or older and self-reported meeting at least two of the 11 DSM-V criteria for either OUD or AUD were included in this study and proceeded beyond the screening criteria portion of this cross-sectional online survey. Example surveys completed by those sorted into the AUD cohort and the OUD cohort are available in the [supplementary materials](#).

History of SUD and treatment

After the patients were sorted into either the AUD or OUD cohort, they received a “fear message” for their specific SUD. For example, those that were in the AUD cohort received the message, “Your responses indicate that you may be at risk for an Alcohol Use Disorder (AUD). AUD is defined as a chronic disease characterized by uncontrollable drinking or preoccupation with alcohol.” The section following the fear message asked whether the participant had ever had a medical profession discuss SUD with them, whether they had ever sought treatment for the SUD, as well as if they were successful in seeking treatment for their SUD. Participants in both cohorts were able to select whether they received pharmacotherapy and/or psychotherapy for their SUD. If participants reported that they had received pharmacotherapy, they were asked to answer an additional question on the type of pharmacotherapy received. For the AUD cohort, the options shown were acamprosate, disulfiram, and naltrexone. For the OUD cohort, the options displayed were methadone, naltrexone, and buprenorphine. Both cohorts were also able to choose “other,” and then enter what medication they had been treated with. While these questions are not specific to the EPPM framework, they were pertinent to the research question.

Evaluating the EPPM constructs using the risk based diagnosis scale

The remainder of the survey was dedicated to assessing the EPPM constructs—perceived susceptibility, perceived

severity, perceived response efficacy, and perceived self-efficacy.(Witte, 1992) The first two constructs assess the respondent's assessment of the fear message and the corresponding threat they face. The last two constructs assess the respondent's assessment of the recommended intervention. The recommended intervention should be presented as a way to mitigate the threat participants face and described briefly.(Cho & Witte, 2005; Witte, 1992) In this study, the recommended intervention was pharmacotherapy. Pharmacotherapy was defined as treatment with any of the three medications approved by the Food and Drug Administration to treat AUD or OUD.(Substance Abuse & Mental Health Services Administration, 2018) In the case of AUD, this was acamprosate, disulfiram, and naltrexone. (Substance Abuse and Mental Health Services Administration, 2015b) For OUD, this was methadone, buprenorphine, and naltrexone.(Substance Abuse & Mental Health Services Administration, 2015c, 2016a, 2016b, 2018)

In order measure the four constructs, the original EPPM Risk Behavior Diagnosis (RBD) Scale was used.(Witte et al., 1996) In the RBD Scale, each construct is measured with three items that participants can respond to on a Likert scale indicating how strongly they agree or disagree with each statement. From these responses, participants receive a score, ranging from one (strongly disagree) to five (strongly agree). The construct score is the summation score of all three items pertaining to that construct. Scores from perceived susceptibility and perceived severity are summed together and represent the overall perceived threat score. Perceived response efficacy and perceived self-efficacy scores are also summed together to identify the total perceived threat score. Both perceived threat and efficacy score ranged from 6 to 30.

From a theoretical standpoint, those who exhibit low perceived threat do not continue to efficacy appraisal. This is because these individuals do not believe themselves to be at risk, therefore there is no need to evaluate a proposed treatment. According to the RBD scale, the cut off for a low perceived threat score is at or below the median (18). Those with a perceived threat score of 18 or lower should be excluded from analysis since they do not need to undergo either fear or danger control processes. For the purpose of having a holistic set of data from each respondent, the research team made the decision to collect efficacy appraisal scores for all participants and make the decision to exclude those with low threat appraisal in the analysis phase rather than terminating the survey after threat appraisal for these individuals.

For those who exhibited high threat appraisal, the perceived efficacy score is used to determine whether the respondent will undergo fear control or danger control processes. In accordance with the RBD Scale, outcome categorization for each respondent was determined by the difference between their perceived efficacy and perceived threat scores. If the difference between these two scores was positive, then the person was categorized as likely to experience danger control processes. This is because a perceived efficacy score higher than a perceived threat score indicates that the individual believes their ability to seek and complete

treatment is greater than their fear from the threat. Likewise, if the difference between the two scores was negative, then the person was categorized as likely to undergo fear control processes. This is because a perceived efficacy score lower than the perceived threat score indicates that the respondent believes their threat to be too great to overcome by the recommended treatment.

Demographic characteristics

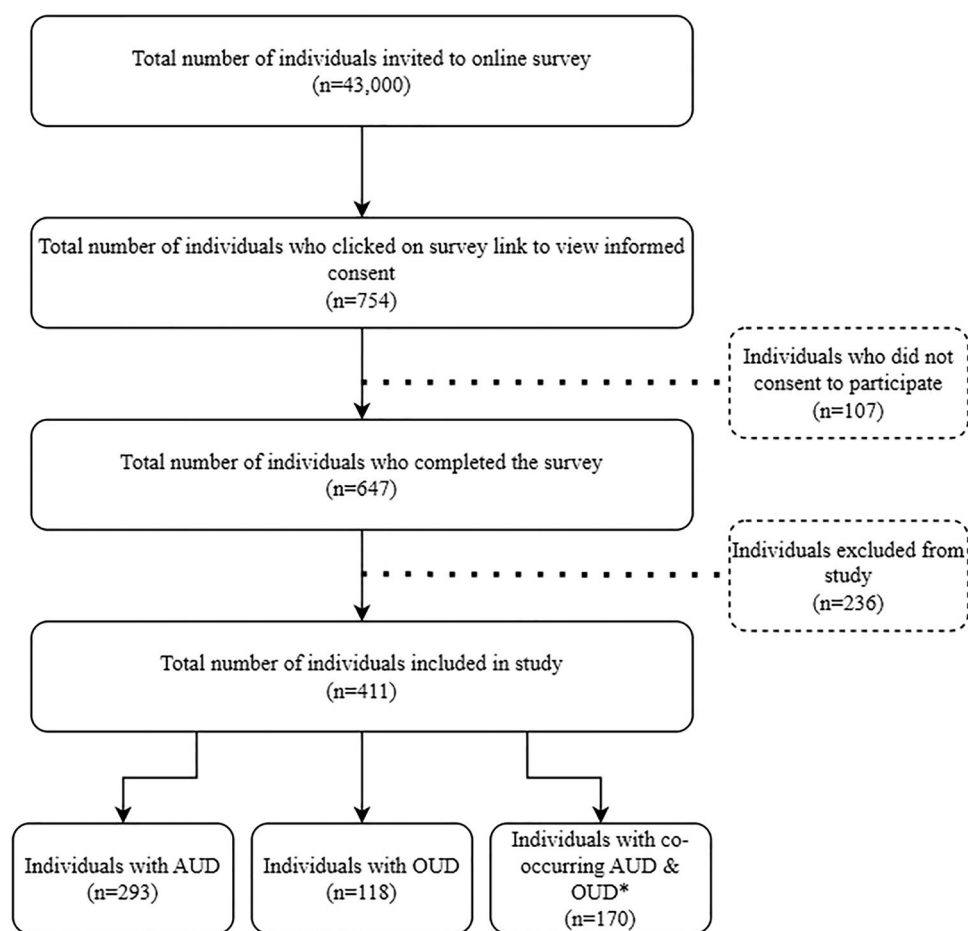
The final section of the survey assessed the demographic makeup of respondents. All questions from this portion of the survey were adapted from the 2019 American Community Survey, administered by the United States Census Bureau.(United States Census Bureau, 2018) Information on racial and ethnic background, level of education, employment status, household income, health insurance status, and marital status were collected. The full survey can be found in the [Supplementary Materials](#) section of this manuscript.

Data analysis and outcome categorization

For the respondents who reported receiving treatment, the type of treatment they received was described. Since the population of interest for this study consists of those who are at risk of an SUD but do not seek treatment, EPPM construct scores were only calculated for those who passed the screening criteria and had not received any treatment in the past. These participants were grouped into one of three categories—those who exhibited low threat appraisal, those that undergo fear control processes, and those that undergo danger control processes as defined by the RBD scale. Chi-square tests were run to determine the association between SUD-type and outcome categorization.

Results

Qualtrics invited approximately 43,000 people to participate in this study and 754 started the survey. After reviewing the informed consent, 107 declined to participate in the survey. A total of 647 complete responses were collected. After the exclusion criteria were applied, the research team was left with 411 complete responses that were eligible for analysis ($n=411$). [Figure 1](#) details the exclusion process and the resulting cohorts. From the 411 complete responses, 293 (71.29%) participants were sorted into the AUD cohort and 118 (28.71%) were sorted into the OUD cohort. There were 170 (41.36%) respondents that met the criteria for both OUD and AUD. Within the co-occurring SUD respondents, 73 indicated that they met more of the DSM-V criteria for AUD and were sorted into the AUD cohort. The remaining 97 co-occurring participants were sorted into the OUD cohort because they were either more severe or equally severe for OUD than they were for AUD according to the items assessed in the DSM-V criteria. The demographic characteristics of the full sample, stratified by SUD cohort, can be found in [Table 1](#).



**Note: Individuals with co-occurring AUD and OUD were grouped into either the OUD or AUD cohort based on level of severity.*

Figure 1. Exclusion criteria and cohort assignment.

Individuals who reported receiving treatment for their SUD ($n=104$) were not reported in the EPPM construct scores. Instead, the type of treatment they received is described in Table 2. Among those who received treatment for AUD ($n=53$, 18.09%), the majority ($n=28$, 52.83%) were treated with naltrexone. In the OUD cohort, 51 (43.22%) participants had reported receiving pharmacotherapy for their SUD and the most common pharmacotherapy reported was methadone ($n=40$, 78.43%). These respondents were not included in the EPPM analysis as this study is focused on the population of individuals at risk of an SUD but have not sought treatment.

Of the 307 participants who had not previously received treatment, 240 were in the AUD cohort and 67 were in the OUD cohort. In the AUD cohort, 75 respondents (31.25%) exhibited low threat and therefore would not undergo efficacy appraisal. The remaining 165 (68.75%) exhibited high threat and would undergo efficacy appraisal. After score calculation, 65 (39.39%) were deemed likely to undergo danger control processes and 100 (60.61%) were likely to experience fear control processes. In the untreated OUD cohort, 16 respondents (23.88%) exhibited low threat. Of the 51 (76.12%) that exhibited high threat, 13 (25.49%) were

categorized into the fear control group and 38 (74.51%) were categorized into the danger control group. A flow chart depicting the category each participant was sorted into can be found in Figure 2. While there was no association between SUD-type and threat level, participants in the OUD cohort were more likely to undergo danger control processes than those in the AUD cohort ($\chi^2 = 19.26$, $p < .05$).

Discussion

In this study, the EPPM framework was used to assess the prevalence of individuals likely to engage in protective measures against the threat of either AUD or OUD. Understanding how patients process the threat of an SUD allows researchers and clinicians to implement interventions that have the highest chance of engaging patients to take protective measures. (Witte, 1992)

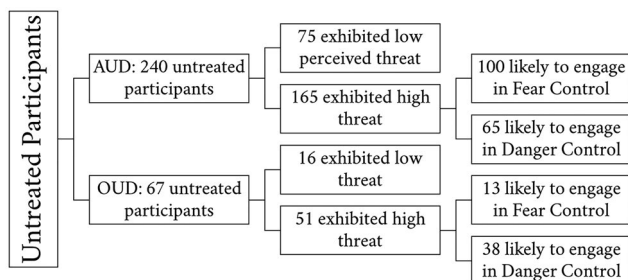
In the OUD cohort, a larger proportion of the participants exhibited a higher threat than those in the AUD cohort. Comparatively, there were also less participants who had been treated for their SUD in the AUD cohort. This could be explained by the fact that consuming alcohol is a social activity and less stigmatized than taking an opioid

Table 1. Demographic characteristics of sample assessed.

	All Responses <i>n</i> = 411	AUD Cohort <i>n</i> = 293	ODD Cohort <i>n</i> = 118
Co-Occurring Met DSM-V Criteria for Both	170	73	97
AGE			
18–24 years	48	37	11
25–34	127	101	26
35–44	153	99	54
45–54	58	37	21
55–64	17	13	4
65+	8	6	2
RACE			
White	304	207	97
Other	107	86	21
EDUCATION LEVEL			
High School or Less	91	70	21
Some College/Associates/Bachelors	225	166	59
Masters/Doctorate/Professional	95	57	38
EMPLOYMENT STATUS			
Employed	312	216	96
Other	99	77	22
INCOME			
Less than \$25,000	66	57	9
\$25,000 to less than \$50,000	106	82	24
\$50,000 to less than \$75,000	74	50	24
\$75,000 to less than \$100,000	40	29	11
\$100,000+	125	75	50
MARITAL STATUS			
Married	220	144	76
Other	191	149	42
INSURANCE			
Private Only	250	181	69
Public Only	116	83	33
Dual	26	13	13
None	19	16	3

Table 2. Pharmacotherapy received for substance use disorder.

Alcohol Use Disorder	<i>N</i> = 53
Acamprosate	25
Disulfiram	24
Naltrexone	28
Other	4
Opioid Use Disorder	<i>N</i> = 51
Methadone	40
Buprenorphine	21
Naltrexone	26

**Figure 2.** Untreated participants EPPM construct designations.

medication regularly. This could translate to lower levels of perceived severity and susceptibility when it comes to evaluating AUD.(Edlund et al., 2009; Sanchez-Ramirez et al., 2018) Irrespective of which SUD cohort participants were in, if they exhibited low threat, they may not adequately understand the adverse effects associated. According to the EPPM, to increase perceived severity of the threat, vivid

and intense language should be used to describe the consequences of the health threat.(Cho & Witte, 2005; Witte, 1992)

For participants who exhibit high threat, the next step is to foster an increased feeling of efficacy—both in themselves and response efficacy of the recommended treatment. (Roberto et al., 2019; Witte, 1992) The ideal outcome would be to experience danger control processes.(Roberto et al., 2019; Witte, 1992) People in danger control have sufficiently high perceptions of efficacy to counteract their threat perceptions. According to the RBD Scale used with EPPM surveys, a participant will only enter danger control processes if their perceived efficacy is greater than their perceived threat.(Witte et al., 1996) Therefore, the higher a person's sense of threat is, the greater their efficacy must be in order to seek protective measures against their SUD. For those experiencing fear control processes, interventions should target educational programs that promote the success of the recommended treatments to increase response efficacy. Another way to increase overall perceived efficacy is to promote self-efficacy.(Burleson & Kaminer, 2005; Rounds-Bryant et al., 1997; Witte et al., 1996) Increasing a person's self-efficacy in their ability to seek and successfully complete treatment involves identification of the infrastructural barriers they may face in seeking treatment as well as resolving any dissonance they may experience when undergoing health behaviors associated with treatment.(Burleson & Kaminer, 2005; Rounds-Bryant et al., 1997; Wombacher et al., 2019) From a research perspective, the next step would be to design, implement, and evaluate interventions for each one

of the three groups identified in this study to understand which are the most effective in meeting their needs. For the population of co-occurring SUDs, the first step should be to understand the difficulties associated with treatment from both a provider and patient perspective. Greater insight on the problem among this population is imperative before we can begin to identify potential interventions.

When examined independently, both opioid and alcohol misuse is common, costly, and associated with an increased risk of morbidity and mortality.(Birnbaum et al., 2011; Florence et al., 2016; Rehm et al., 2009; Wall et al., 2000; Witkiewitz & Vowles, 2018) However, the body of research examining the two in concordance with one another is lacking.(Witkiewitz & Vowles, 2018) Nonmedical use of opioid medications has been shown to increase the risk of an AUD diagnosis among adults in the United States.(Witkiewitz & Vowles, 2018) Those who consumed alcohol within the past year were also more likely to have misused prescription drugs in the past year as well.(Substance Abuse & Mental Health Services Administration, 2020) Another study assessing the prevalence of comorbid AUD/OD found that 23.4% of those with an OUD also had an AUD diagnosis.(Witkiewitz & Vowles, 2018) Patients with co-occurring SUDs represent the highest-risk population with the greatest need for intervention and treatment.(Bogdanowicz et al., 2015; Friedmann et al., 2018; Witkiewitz et al., 2018) However, it is possible that they face an added level of confusion and complications when seeking treatment.(Bogdanowicz et al., 2015; Morgan et al., 2022) While this study did not assess this population specifically, it did find that they accounted for a significant proportion of the sample. Therefore, future research should focus on this population exclusively to identify the impediments associated with treatment.

Limitations

This study does have limitations. Participants were presented with the DSM-V criteria for OUD and AUD and asked to select which ones they had exhibited within the past year. It is possible that recall bias affected their responses, and participants were unable to remember instances within the past year. Recall bias can also affect the respondents' self-report of treatment received. The sample size in this study is also not adequate to generalize to the larger population of adults with an AUD or OUD; however, this study does provide valuable insight into the emotional and cognitive factors involved in processing the threat of an SUD as well as the recommended treatment. Additionally, another limitation of this study is that the DSM-V is primarily intended for health-care practitioners to go over with patients and not as a self-assessment scale. It is possible that without a physician there to interpret and ascertain the information in the DSM-V, patients may have a different understanding of the question.

Conclusion

The results of this study indicate that patients who are suffering from either OUD, AUD, or both do generally

perceive their illness to be severe. However, many engage in fear control processes and denial rather than taking a proactive approach in mitigating their illness. In order to promote protective health behaviors, it is important to ascertain how patients perceive their threat and the recommended intervention. With this information, clinicians can then design appropriate and meaningful messaging. For individuals who are experiencing low threat, the EPPM recommends rephrasing the messaging around the severity and susceptibility of the threat to be more pronounced regarding the dangers associated. For individuals experiencing fear control processes, EPPM recommends interventions targeted at increasing response efficacy or self-efficacy to where patients are able to overcome their fear of the threat. Lastly, for individuals experiencing danger control processes, interventions must be designed to support their treatment and maintenance of healthy behaviors after treatment.

Declaration of interest

No authors reported a conflict of interest.

Funding

This work was supported by Texas Targeted Opioid Response, a public health initiative operated by the Texas Health and Human Services Commission through federal funding from the Substance Abuse and Mental Health Services Administration (SAMHSA) grant award number H79TI081729. The views and opinions contained in this research do not necessarily reflect those of SAMHSA, U.S. Department of Health and Human Services, or Texas Health and Human Services Commission, and should not be construed as such.

ORCID

Vaishnavi Tata  <http://orcid.org/0000-0001-8024-9743>

Austin De La Cruz  <http://orcid.org/0000-0002-6807-4474>

References

- Abraham, A. J., Andrews, C. M., Yingling, M. E., & Shannon, J. (2018). Geographic disparities in availability of opioid use disorder treatment for medicaid enrollees. *Health Services Research*, 53(1), 389–404. <https://doi.org/10.1111/1475-6773.12686>
- Ali, M. M., Teich, J. L., & Mutter, R. (2017). Reasons for not seeking substance use disorder treatment: Variations by health insurance coverage. *The Journal of Behavioral Health Services & Research*, 44(1), 63–74. <https://doi.org/10.1007/s11414-016-9538-3>
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders*. (5th ed.).
- Birnbaum, H. G., White, A. G., Schiller, M., Waldman, T., Cleveland, J. M., & Roland, C. L. (2011). Societal costs of prescription opioid abuse, dependence, and misuse in the United States. *Pain Medicine (Malden, Mass.)*, 12(4), 657–667. <https://doi.org/10.1111/j.1526-4637.2011.01075.x>
- Bogdanowicz, K. M., Stewart, R., Broadbent, M., Hatch, S. L., Hotopf, M., Strang, J., & Hayes, R. D. (2015). Double trouble: Psychiatric comorbidity and opioid addiction—All-cause and cause-specific mortality. *Drug and Alcohol Dependence*, 148, 85–92. <https://doi.org/10.1016/j.drugalcdep.2014.12.025>
- Buckley, P. F., & Brown, E. S. (2006). Prevalence and consequences of dual diagnosis. *The Journal of Clinical Psychiatry*, 67(7), e01. <https://doi.org/10.4088/jcp.0706e01>

- Burleson, J. A., & Kaminer, Y. (2005). Self-efficacy as a predictor of treatment outcome in adolescent substance use disorders. *Addictive Behaviors*, 30(9), 1751–1764. <https://doi.org/10.1016/j.add-beh.2005.07.006>
- Cho, H., & Witte, K. (2005). Managing fear in public health campaigns: A theory-based formative evaluation process. *Health Promotion Practice*, 6(4), 482–490. <https://doi.org/10.1177/1524839904263912>
- Collaborative, H. C. C. (2014). *The Extended Parallel Process Model: An HC3 Research Primer*. <http://www.healthcommcapacity.org/wp-content/uploads/2014/09/Extended-Parallel-Processing-Model.pdf>
- Dillard, J. P., Li, R., Meczkowski, E., Yang, C., & Shen, L. (2017). Fear responses to threat appeals: Functional form, methodological considerations, and correspondence between static and dynamic data. *Communication Research*, 44(7), 997–1018. <https://doi.org/10.1177/0093650216631097>
- Dubé, E., Vivion, M., & MacDonald, N. E. (2015). Vaccine hesitancy, vaccine refusal and the anti-vaccine movement: Influence, impact and implications. *Expert Review of Vaccines*, 14(1), 99–117. <https://doi.org/10.1586/14760584.2015.964212>
- Edlund, M. J., Booth, B. M., & Feldman, Z. L. (2009). Perceived need for treatment for alcohol use disorders: Results from two national surveys. *Psychiatric Services (Washington, D.C.)*, 60(12), 1618–1628. <https://doi.org/10.1176/ps.2009.60.12.1618>
- Florence, C. S., Zhou, C., Luo, F., & Xu, L. (2016). The economic burden of prescription opioid overdose, abuse, and dependence in the United States, 2013. *Medical Care*, 54(10), 901–906. <https://doi.org/10.1097/MLR.0000000000000625>
- Friedmann, P. D., Wilson, D., Nunes, E. V., Hoskinson, R., Lee, J. D., Gordon, M., Murphy, S. M., Bonnie, R. J., Chen, D. T., Boney, T. Y., & O'Brien, C. P. (2018). Do patient characteristics moderate the effect of extended-release naltrexone (XR-NTX) for opioid use disorder? *Journal of Substance Abuse Treatment*, 85, 61–65. <https://doi.org/10.1016/j.jsat.2017.01.018>
- Friesen, E. L., & Kurdyak, P. (2020). The impact of psychiatric comorbidity on treatment discontinuation among individuals receiving medications for opioid use disorder. *Drug and Alcohol Dependence*, 216, 108244. <https://doi.org/10.1016/j.drugalcdep.2020.108244>
- Hopwood, C. J., Good, E. W., & Morey, L. C. (2018). Validity of the DSM-5 levels of personality functioning scale-self report. *Journal of Personality Assessment*, 100(6), 650–659. <https://doi.org/10.1080/00223891.2017.1420660>
- Jones, E. B. (2018). Medication-assisted opioid treatment prescribers in federally qualified health centers: Capacity lags in rural areas. *The Journal of Rural Health: Official Journal of the American Rural Health Association and the National Rural Health Care Association*, 34(1), 14–22. <https://doi.org/10.1111/jrh.12260>
- Morgan, J. R., Quinn, E. K., Chaisson, C. E., Ciemiens, E., Stempniewicz, N., White, L. E., & Laroche, M. R. (2022). Potential barriers to filling buprenorphine and naltrexone prescriptions among a retrospective cohort of individuals with opioid use disorder. *Journal of Substance Abuse Treatment*, 133, 108540. <https://doi.org/10.1016/j.jsat.2021.108540>
- Novak, P., Feder, K. A., Ali, M. M., & Chen, J. (2019). Behavioral health treatment utilization among individuals with co-occurring opioid use disorder and mental illness: Evidence from a national survey. *Journal of Substance Abuse Treatment*, 98, 47–52. <https://doi.org/10.1016/j.jsat.2018.12.006>
- Parker, M. H., & Tobin, B. (2001). Refusal of treatment. *The Medical Journal of Australia*, 174(10), 531–532. <https://doi.org/10.5694/j.1326-5377.2001.tb143410.x>
- Priester, M. A., Browne, T., Iachini, A., Clone, S., DeHart, D., & Seay, K. D. (2016). Treatment access barriers and disparities among individuals with co-occurring mental health and substance use disorders: An integrative literature review. *Journal of Substance Abuse Treatment*, 61, 47–59. <https://doi.org/10.1016/j.jsat.2015.09.006>
- Prochaska, J. O. (2008). Decision making in the transtheoretical model of behavior change. *Medical Decision Making: An International Journal of the Society for Medical Decision Making*, 28(6), 845–849. <https://doi.org/10.1177/0272989x08327068>
- Rapp, R. C., Xu, J., Carr, C. A., Lane, D. T., Wang, J., & Carlson, R. (2006). Treatment barriers identified by substance abusers assessed at a centralized intake unit. *Journal of Substance Abuse Treatment*, 30(3), 227–235. <https://doi.org/10.1016/j.jsat.2006.01.002>
- Rehm, J., Mathers, C., Popova, S., Thavorncharoensap, M., Teerawattananon, Y., & Patra, J. (2009). Global burden of disease and injury and economic cost attributable to alcohol use and alcohol-use disorders. *Lancet (London, England)*, 373(9682), 2223–2233. [https://doi.org/10.1016/S0140-6736\(09\)60746-7](https://doi.org/10.1016/S0140-6736(09)60746-7)
- Roberto, A. J., Mongeau, P. A., & Liu, Y. (2018). A (Re)defining moment for fear appeals: A comment on Kok et al. (2018). *Health Psychology Review*, 12(2), 144–146. <https://doi.org/10.1080/17437199.2018.1445546>
- Roberto, A. J., Mongeau, P. A., Liu, Y., & Hashi, E. C. (2019). “Fear the flu, not the flu shot”: A test of the extended parallel process model. *Journal of Health Communication*, 24(11), 829–836. <https://doi.org/10.1080/10810730.2019.1673520>
- Rounds-Bryant, J. L., Flynn, P. M., & Craighead, L. W. (1997). Relationship between self-efficacy perceptions and in-treatment drug use among regular cocaine users. *The American Journal of Drug and Alcohol Abuse*, 23(3), 383–395. <https://doi.org/10.3109/00952999709016884>
- Sanchez-Ramirez, D. C., Franklin, R. C., & Voaklander, D. (2018). Perceptions about alcohol harm and alcohol-control strategies among people with high risk of alcohol consumption in Alberta, Canada and Queensland, Australia. *Journal of Preventive Medicine and Public Health = Yebang Uihakhoe Chi*, 51(1), 41–50. <https://doi.org/10.3961/jpmph.17.112>
- Substance Abuse and Mental Health Services Administration. (2015a, September 28 2015). *Medication and Counseling Treatment*. Retrieved October 2 from <https://www.samhsa.gov/medication-assisted-treatment/treatment#medications-used-in-mat>
- Substance Abuse and Mental Health Services Administration. (2015b). Medication for the treatment of alcohol use disorder: A brief guide. In *National Institute on Alcohol Abuse and Alcoholism*. (Ed.).
- Substance Abuse and Mental Health Services Administration. (2015c, September 28). 2015 *Methadone*. Retrieved October 2 from <https://www.samhsa.gov/medication-assisted-treatment/treatment/methadone>
- Substance Abuse and Mental Health Services Administration. (2016a). *Buprenorphine*. Retrieved 26 September from <https://www.samhsa.gov/medication-assisted-treatment/treatment/buprenorphine>
- Substance Abuse and Mental Health Services Administration. (2016b). September 12 2016 *Naltrexone*. Retrieved October 2 from <https://www.samhsa.gov/medication-assisted-treatment/treatment/naltrexone>
- Substance Abuse and Mental Health Services Administration. (2018). Medications for Opioid Use Disorder: For Healthcare and Addiction Professionals, Policymakers, Patients, and Families. In.
- Substance Abuse and Mental Health Services Administration. (2020). Key Substance Use and Mental Health Indicators in the United States: Results from the 2019 National Survey on Drug Use and Health. In. United States Department of Health and Human Services.
- Thornton, J. D., Lyvers, E., Scott, V. G., & Dwibedi, N. (2017). Pharmacists' readiness to provide naloxone in community pharmacies in West Virginia. *Journal of the American Pharmacists Association: JAPhA*, 57(2S), S12–S18.e4. e14. <https://doi.org/10.1016/j.japh.2016.12.070>
- United States Census Bureau. (2018). American Community Survey [Census].
- United States Department of Health and Human Services. (2017). October 26, HHS Acting Secretary Declares Public Health Emergency to Address National Opioid Crisis <https://www.hhs.gov/about/news/2017/10/26/hhs-acting-secretary-declares-public-health-emergency-address-national-opioid-crisis.html>
- Wall, R., Rehm, J., Fischer, B., Brands, B., Gliksman, L., Stewart, J., Medved, W., & Blake, J. (2000). Social costs of untreated opioid dependence. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, 77(4), 688–722. <https://doi.org/10.1007/BF02344032>
- Wilson, H. D., Dansie, E. J., Kim, M. S., Moskovitz, B. L., Chow, W., & Turk, D. C. (2013). Clinicians' attitudes and beliefs about opioids survey (CAOS): Instrument development and results of a national physician survey. *The Journal of Pain*, 14(6), 613–627. <https://doi.org/10.1016/j.jpain.2013.01.769>

- Witkiewitz, K., Votaw, V. R., Vowles, K. E., & Kranzler, H. R. (2018). Opioid misuse as a predictor of alcohol treatment outcomes in the COMBINE study: Mediation by medication adherence. *Alcoholism, Clinical and Experimental Research*, 42(7), 1249–1259. <https://doi.org/10.1111/acer.13772>
- Witkiewitz, K., & Vowles, K. E. (2018). Alcohol and opioid use, co-use, and chronic pain in the context of the opioid epidemic: A critical review. *Alcoholism, Clinical and Experimental Research*, 42(3), 478–488. <https://doi.org/10.1111/acer.13594>
- Witte, K. (1992). Putting the fear back into fear appeals: The extended parallel process model. *Communication Monographs*, 59(4), 329–349. <https://doi.org/10.1080/03637759209376276>
- Witte, K., Cameron, K. A., McKeon, J. K., & Berkowitz, J. M. (1996). Predicting risk behaviors: Development and validation of a diagnostic scale. *Journal of Health Communication*, 1(4), 317–341. <https://doi.org/10.1080/108107396127988>
- Wombacher, K., Harrington, N. G., Scott, A. M., Helme, D. W., & Martin, C. (2019). Communication apprehension mediates the effects of past experience discussing substance use on child and adolescent psychiatrists' self-efficacy. *Patient Education and Counseling*, 102(4), 651–655. <https://doi.org/10.1016/j.pec.2018.10.020>
- Wu, L.-T., Zhu, H., & Swartz, M. S. (2016). Treatment utilization among persons with opioid use disorder in the United States. *Drug and Alcohol Dependence*, 169, 117–127. <https://doi.org/10.1016/j.drugalcdep.2016.10.015>