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Associations between heavy drinker's alcohol-related social media exposures and personal beliefs and attitudes regarding alcohol treatment

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ABSTRACT

Objective: Social media use among American adults is ubiquitous. Alcohol-related social media posts often glamorize heavy drinking, with increased exposure to such content associated with greater alcohol use. Comparatively less is known, however, about how social media promotes alcohol-related health behavior change. Greater scientific knowledge in this area may enhance our understanding of the relationship between social media and alcohol behaviors, helping to inform clinical and public health recommendations. We examined the relationship between exposure to peer alcohol-related social media posts (pro-drinking, negative consequences, and pro-treatment/recovery) and treatment-seeking intentions among heavy drinkers, as well as potential mediators of the relationship (e.g., attitudes toward treatment effectiveness).
Method: Hazardous drinking adults (aged 18–55 years) who use social media ($N = 499$) completed an online questionnaire. Linear regression analysis examined the association between alcohol-related social media exposures and treatment-seeking intentions. Mediation was tested using structural equation modelling
Results: Exposure to peer pro-drinking posts was negatively associated with intentions to seek treatment ($\beta = -0.67$, $p < 0.01$), whereas exposures to peer alcohol-related negative consequences posts and peer posts about positive experiences with treatment/recovery were positively associated with treatment-seeking intentions ($\beta = 0.69$, $p < 0.01$; $\beta = 1.23$, $p < 0.001$, respectively). Mediation analysis concluded the effect of exposures on intentions was explained partially by attitudes toward treatment effectiveness (25.5%) and alcohol treatment stigma (6.1%). **Conclusions:** Findings suggest peers' alcohol-related social media posts may both promote and hinder health behavior change depending on the nature of the post. Future research that develops and tests social media-delivered interventions to promote treatment and recovery seeking is warranted.

1. Introduction

Over 28 million Americans meet diagnostic criteria for an alcohol use disorder (AUD) SAMHSA, 2021). While evidence-based treatment options for AUD exist, <10% of American adults with AUD utilize treatment services in a given year (SAMHSA, 2021). The promotion of alcohol-related health behavior change among these non-treatment-seeking individuals is an important public health target. Social media platforms (e.g., Facebook, Instagram, TikTok, Twitter) may offer an innovative pathway to engage this population in a naturalistic setting by circumventing barriers to service engagement and enhancing AUD treatment and recovery uptake.

1.1. Social media use and drinking behaviors

The vast majority of American adults (72%), especially those under the age of 30 (84%), use at least one social media platform (Pew Research Center, 2021a). YouTube (81%), Facebook (69%), Instagram (40%), Snapchat (25%), Twitter (23%), TikTok (21%), and Reddit (18%) represent seven of the ten most used social media platforms among adults 30 years and under (Pew Research Center, 2021b).

Research has shown that social media experiences may influence

health behaviors, including alcohol use (Curtis et al., 2018; Lobstein et al., 2017; Moreno & Whitehill, 2014; Morgan et al., 2010; Noel et al., 2020; Sudhinaraset et al., 2016). Alcohol-related social media posts tend to portray drinking in a positive manner, often glamorizing and normalizing heavy drinking behaviors (e.g., intoxication, blacking out), while rarely depicting any alcohol-related negative consequences (Cavazos-Rehg et al., 2015; Curtis et al., 2018; Litt et al., 2018; Lobstein et al., 2017; Moreno & Whitehill, 2014; Morgan et al., 2010; Noel et al., 2020; Riordan et al., 2019; Russell, Davis, et al., 2021; Sudhinaraset et al., 2016). Increased exposure to this alcohol-related social media content among adolescents and young adults, in particular, is associated with increased alcohol consumption and alcohol-related problems (Curtis et al., 2018; Lobstein et al., 2017; Moreno & Whitehill, 2014; Noel et al., 2020; Sudhinaraset et al., 2016). While much research has been conducted at the intersection of social media and alcohol use, the majority of this work has highlighted the contribution of alcohol-related social media posts on adolescent and young adult drinking trajectories. However, less is known about the impacts of exposure to alcohol-focused content on adults with AUD. Moreover, we know little about the impact of alcohol-related social media content on alcohol treatment seeking.

1.2. Social media and online recovery support

On the contrary, social media may also be a viable pathway to initiate and sustain positive alcohol-related behavior change (i.e., attempts to abstain from or cut down on alcohol use) among those with AUD. For example, on TikTok, individuals in AUD recovery may share videos depicting their recovery journeys, celebratory milestones (i.e., number of days/years sober), and struggles (e.g., recurrence to alcohol use) to bolster their recovery support and give hope to others who are struggling with their own alcohol use (Russell et al., 2021). On Twitter, individuals have voiced concerns about addiction recovery during the COVID-19 pandemic (e.g., difficulty coping due to social isolation and lack of access to in-person addiction services during social distancing restrictions; Glowacki et al., 2020). Reddit is a discussion board-based social media platform where many individuals are giving and receiving social support during attempts to abstain from or cut down on their drinking or drug use (Bunting et al., 2021; Colditz et al., 2020; D'Agostino et al., 2017; Sowles et al., 2017). While more rigorous evaluations of how individuals participate in, and may benefit from, social media participation are needed, this emerging body of literature suggests individuals may be resolving their alcohol-related problems with the help of these social media platforms. Based on this prior work, it can be hypothesized that exposure to social media content positively portraying individuals' experiences with receiving alcohol treatment or involvement in recovery may increase knowledge of evidence-based treatment services while also normalizing AUD help-seeking behaviors (Russell et al., 2021; Slade et al., 2021).

1.3. Current investigation

To address current gaps in the literature, we sought to determine associations between alcohol-related social media exposures (peer pro-drinking posts, peer alcohol-related negative consequences posts, and peer posts about positive experiences with alcohol treatment or involvement in recovery) and intentions to seek alcohol treatment among a sample of adults (aged 18–55) with AUD. Grounded in a conceptual model based on the Theory of Planned Behavior (Ajzen, 1991), we hypothesized that associations between alcohol-related social media exposures and intentions to seek alcohol treatment were mediated by attitudes (alcohol treatment-effectiveness), social norms (alcohol treatment stigma), and perceived behavioral control (capability of accessing alcohol treatment). Based on this model, we predicted that increased exposure to peers' alcohol-related social media content portraying alcohol or drinking in a positive manner would be associated with decreased intentions to seek alcohol treatment and that this association

would be mediated by belief-based factors and attitudes. We also hypothesized the inverse; increased exposure to peer posts depicting positive experiences with alcohol treatment or involvement in recovery would be associated with increased intentions to utilize alcohol treatment.

2. Methods

2.1. Data collection and procedures

Participants were recruited using Qualtrics Panels, a survey management service that hosts a pool of potential research participants. Upon clicking a link to the online survey hosted on Qualtrics, respondents were first presented with an information sheet outlining the description of the study and consent process. After providing consent, potential participants completed a screening questionnaire to determine eligibility for participation in the study. Respondents who met the following inclusion criteria were deemed eligible for participation: (a) between the ages of 18–55 years, (b) used at least one of the following social media platforms in the last 30 days: Facebook, Instagram, Reddit, Snapchat, TikTok, Twitter, YouTube, (c) met criteria for hazardous drinking, defined as having scored 8 or higher on the Alcohol Use Disorders Identification Test (AUDIT; Babor et al., 2001; Higgins-Biddle & Babor, 2018), and (d) answered "no" to "Have you ever gone anywhere or seen anyone for a reason that was related in any way to your drinking: a physician, counselor, Alcoholics Anonymous (AA), or any other community agency or professional? Yes or No" (National Epidemiologic Survey on Alcohol and Related Conditions-III). Eligible participants then completed the survey questionnaire covering demographics, social media use and exposures, and alcohol treatment beliefs and attitudes. The survey took an average of approximately 20 min to complete, and data collection occurred in October 2021. Qualtrics was paid by the researchers at a rate of $12USD per participant, though actual compensation of participants was facilitated by Qualtrics at a prespecified rate agreed upon by the participant. Study procedures were vetted and approved by the University IRB prior to data collection.

2.2. Measures

2.2.1. Primary outcome: intentions to seek alcohol treatment

Intentions to utilize alcohol treatment services was assessed with a visual analog scale from 0 (Disagree very strongly) to 10 (Agree very strongly) by adapting language from the 9-item scale used by Zemore and Ajzen (2014) to predict treatment completion (e.g., "I intend to [visit a physician, counselor, Alcoholics Anonymous (AA), or any other community agency or professional, or seek any other help for my drinking]").

2.2.2. Primary predictors: social media use and alcohol-related social media exposures

Using a visual analog scale (0 days [None] to 30 days [Every day]), participants were first asked to indicate the frequency with which they had checked the following social media platforms in the previous month: Facebook, Instagram, Reddit, Snapchat, TikTok, Twitter, and YouTube. For each of the seven platforms that a participant indicated they had used at least once in the previous month, participants were asked to report on the frequency with which they encountered the following when checking each platform: 1) peer pro-drinking posts ("pictures, videos, or text posted by friends/peers portraying alcohol, drinking, or being drunk in a positive manner"), 2) peer alcohol-related negative consequences posts ("pictures, videos, or text posted by friends/peers, in which they discussed experiences with an alcohol-related negative consequence, such as a hangover, physical injury, legal problems, emotional/social consequences, etc."), and 3) peer posts about positive experiences with alcohol treatment or involvement in recovery ("pictures, videos, or text posted by friends/peers related to positive

experiences with receiving any type of alcohol treatment or involvement in 12 step-recovery (e.g., Alcoholics Anonymous) or other self-help groups (e.g., SMART recovery)." For each of these three follow-up questions, response options included Never (0), Rarely (1), Occasionally (2), Often (3), and Always (4).

To facilitate prompted recall and to increase reliability, respondents were presented with multiple examples of each type of alcohol-related social media exposure along with each exposure item (See Fig. 1). To enhance construct validity for the measurement of treatment/recovery post exposure, respondents were also presented with examples of alcohol treatment options (e.g., inpatient and outpatient rehabilitation, medications to help people stop or reduce their drinking, and behavioral/psychological treatments provided by licensed therapists aimed at

changing drinking behaviors) and recovery support services (e.g., mutual-help groups providing peer support for stopping or reducing drinking, such as Alcoholics Anonymous). Frequency of exposure to each type of alcohol-related content on each platform was weighted by the frequency with which the respondent checked each platform. A total exposure score for each type of alcohol-related social media content was calculated by averaging weighted platform exposure scores from each individual platform.

2.2.3. Mediators: beliefs and attitudes regarding treatment

Adapting procedures from a prior investigation on beliefs and attitudes regarding drug treatment (Booth et al., 2014), beliefs about alcohol treatment effectiveness ("How effective do you think alcohol
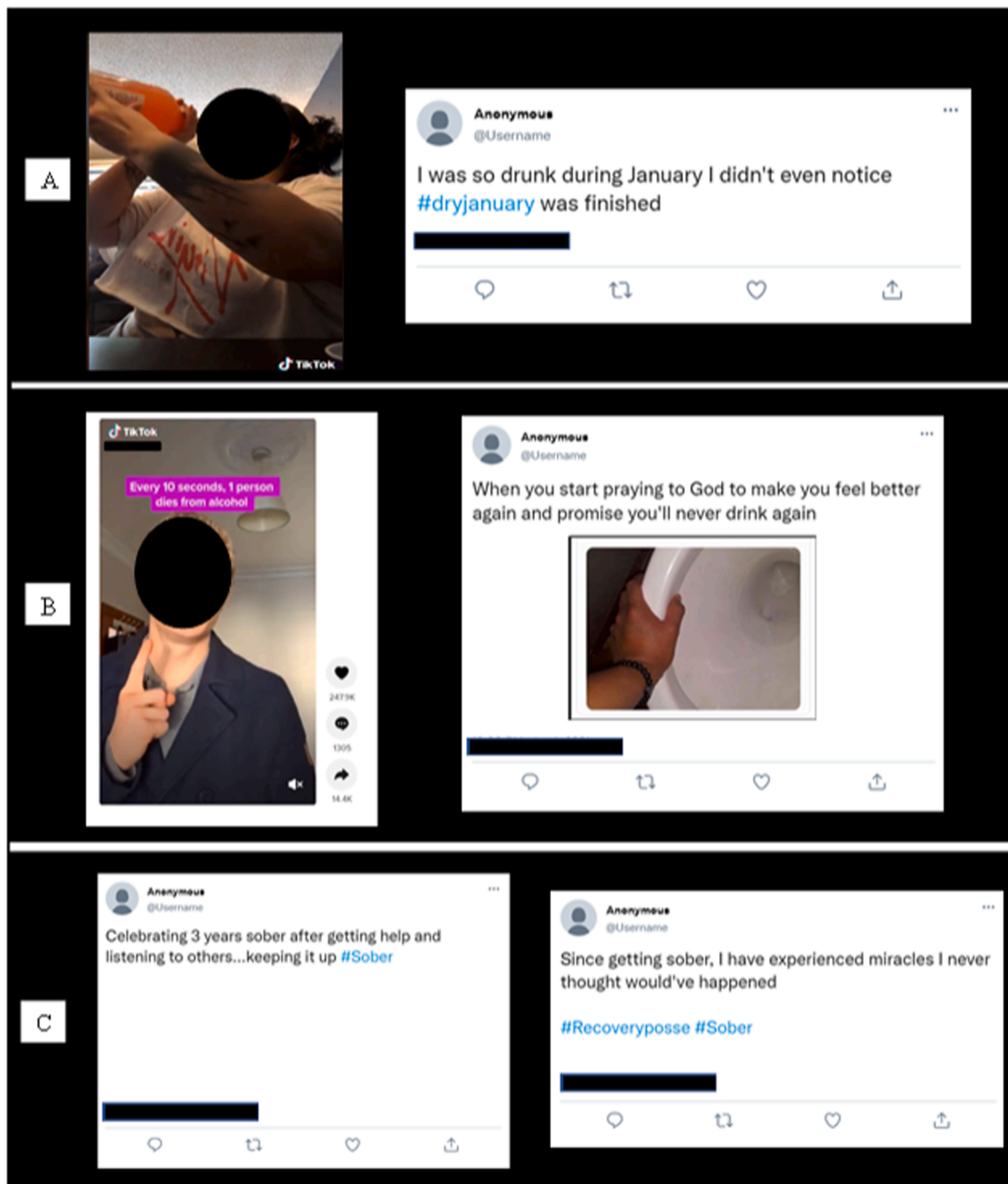

Fig. 1. Screenshot examples of alcohol-related social media exposures used for prompted recall (content slightly modified to capture original sentiment while preserving anonymity). *Note*: A = Posts positively portraying alcohol or drinking; B = Posts about alcohol-related negative consequences; C = Posts about positive experiences with alcohol treatment or involvement in recovery.

treatment would be at helping you quit or cut down on your drinking?") was measured on a visual analog scale ranging from 0 (Not effective at all) to 10 (Very effective).

Social norms, operationalized as alcohol treatment stigma for the current stigma, was measured by adapting the Substance Abuse Perceived Stigma Scale by replacing "substance use" with "alcohol use" for all items (SAPSS; Luoma et al., 2007). The SAPSS is a 12-item questionnaire that assesses perceived stigma toward those who might be labeled as a person with a substance use disorder or those who have been in alcohol or drug treatment (e.g., "Most people believe that someone who has been treated for [alcohol use] is just as trustworthy as the average citizen."). Response options are presented on a 7-point Likert scale and range from 1 (Very strongly disagree) to 7 (Very strongly agree). A lower overall score indicates higher perceived stigma.

Perceived behavioral control ("If I wanted to, I could easily access alcohol treatment [e.g., alcohol rehabilitation program, alcohol detoxification clinic, outpatient clinic, Alcoholics Anonymous, private physician, psychiatrist, psychologist, social worker, or any other agency or professional]") was measured using a visual analog scale, ranging from 0 (Not capable at all) to 10 (Very capable).

2.2.4. Covariates

Relevant covariates accounted for AUD severity (continuous AUDIT scores ranging from 8 to 40) and several sociodemographic variables often associated with alcohol use, including age (continuous variable), biological sex (female or male), race/ethnicity (Non-Hispanic White, Non-Hispanic Black, Hispanic, Asian and others), marital status (married or not), education (less than high school, high school, college, or higher than college), unemployment (unemployed or not), and income level (less than $25,000, $25,000 - $50,000, $51,000 - $75,000, $76,000 - $100,000, or $101,000 and above).

2.3. Analytical methodology

Descriptive statistics, including percentages and frequencies for categorical variables and means and standard deviations for continuous variables, were calculated. Linear regression analysis was conducted to explore the association between alcohol-related social media exposures and intentions to seek alcohol treatment, above and beyond the influence of covariates. Mediation was tested using structural equation modeling (SEM) to determine whether, consistent with the Theory of Planned Behavior (Ajzen, 1991), associations between alcohol-related social media exposures and intentions to seek alcohol treatment were mediated by beliefs about alcohol treatment effectiveness, alcohol treatment stigma, and perceived behavioral control, after controlling for

covariates. A latent variable that represented the three types of alcohol-related social media exposures was included in the mediation model. The conceptual model of the mediation analysis is shown in Fig. 2. The total effect was computed by summing up the direct effect and indirect effect (Kline, 2016). The mediation proportion (i.e., indirect effect divided by the total effect) was calculated to show the percentage of total effect that was accounted for by mediation. The root mean squared error of approximation (RMSEA), comparative fit index (CFI), and standardized root mean squared residual (SRMR) were used to evaluate the overall model fit (Kline, 2016; Schumacker & Lomax, 2010). All statistical analyses were performed with STATA 15.

3. Results

3.1. Sample characteristics.

The study sample consisted of 499 U.S. adults aged 18–55 years ($M = 36.1$, $SD = 8.6$; Table 1). Half of participants were female (52.7%) and two-thirds were Non-Hispanic White (66.9%), with 15.4% Hispanic, 9.2% Non-Hispanic Black, and 8.4% Asian and others. Almost half reported being currently married (47.1%). Most participants (80.8%) previously graduated high school and over half (52.9%) received a college degree. More than one in every ten participants (13.4%) were currently unemployed. Those who were employed differed widely in terms of income levels with almost half (48.3%) earning less than $50,000. Among our sample of individuals with AUDIT scores 8 or greater, the average score was 14.2 ($SD = 5.9$).

Each of the seven social media platforms was used at least once within the previous month by over 70% of participants. YouTube past-month use was reported by 97.4% of participants, followed by Facebook (96.0%), Instagram (87.2%), Twitter (78.2%), Snapchat (75.8%), TikTok (74.4%), and Reddit (73.0%). In terms of past 30-day frequency of using these social media platforms, participants reported using Facebook ($M = 21.5$ days, $SD = 9.6$), YouTube ($M = 20.3$, $SD = 9.6$), and Instagram ($M = 17.3$, $SD = 11.1$) most often over the past month.

3.2. Relationship between social media exposures and intentions to seek alcohol treatment.

Results from linear regression analysis indicated self-reported exposure to all three types of alcohol-related social media content was significantly associated with intentions to seek alcohol treatment (Table 2). Overall, 36.68% of the variance in intentions to seek alcohol treatment was explained by social media exposure predictor variables and covariates. Whereas exposure to peer pro-drinking posts was
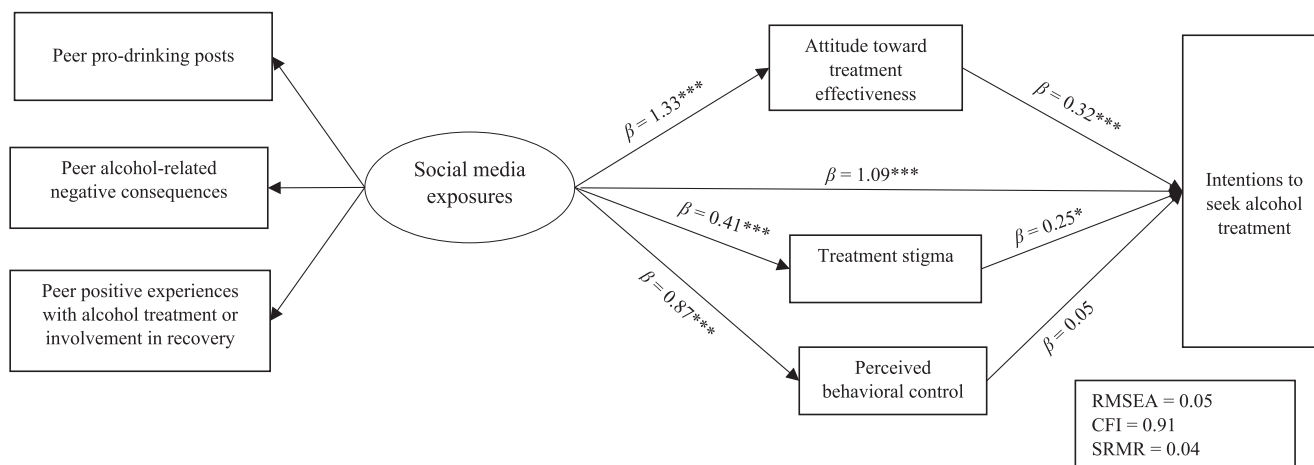

Fig. 2. Mediation analysis of attitude toward treatment effectiveness, alcohol treatment stigma, and perceived behavioral control on the association between social media exposures and intentions to seek alcohol treatment ($N = 499$). *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$. *Note*: Covariates were controlled (omitted in figure).

Table 1
Descriptive statistics of study sample (N = 499*)*.

Variable	N (%) or Mean (SD)	Min.	Max.
Frequency of social media use			
Facebook	21.5 (9.6)	0	30
Instagram	17.3 (11.1)	0	30
Reddit	10.6 (10.0)	0	30
Snapchat	12.9 (11.5)	0	30
TikTok	13.0 (11.6)	0	30
Twitter	12.8 (11.2)	0	30
YouTube	20.3 (9.6)	0	30
Sociodemographics			
Gender			
Female	263 (52.71%)		
Male	236 (47.29%)		
Race/ethnicity			
Non-Hispanic White	334 (66.93%)		
Non-Hispanic Black	46 (9.22%)		
Asian and others	42 (8.42%)		
Hispanic	77 (15.43%)		
Age	36.1 (8.6)	18	55
Marital status: married	235 (47.09%)		
Education			
Less than high school	96 (19.24%)		
High school	139 (27.86%)		
College	202 (40.48%)		
Higher than college	62 (12.42%)		
Unemployment	67 (13.43%)		
Income			
Less than $25,000	122 (24.45%)		
$25,000 - $50,000	119 (23.85%)		
$51,000 - $75,000	74 (14.83%)		
$76,000 - $100,000	92 (18.44%)		
$101,000 and above	92 (18.44%)		
Alcohol use disorder (AUDIT score)	14.2 (5.9)	8	40
Attitude toward alcohol treatment effectiveness [a]	5.6 (2.8)	0	10
Alcohol treatment stigma [b]	4.5 (1.1)	1	7
Perceived behavioral control [a]	7.1 (2.1)	0	10
Intentions to seek alcohol treatment [a]	3.5 (3.1)	0	10

Note: [a] Attitude toward alcohol treatment effectiveness, perceived behavioral control, and intentions to seek alcohol treatment were measured using a visual analog scale, ranging from 0 to 10.
[b] Alcohol treatment stigma was scored using a 7-point Likert scale, coding from 1 (Very strongly disagree) to 7 (Very strongly agree).

negatively associated with intentions to seek alcohol treatment (β = -0.67, $p < 0.01$), exposure to peer posts about alcohol-related negative consequences ($\beta = 0.69$, $p < 0.01$) and peer posts about positive experiences with alcohol treatment or involvement in recovery was positively associated with intentions to seek alcohol treatment ($\beta = 1.23$, $p < 0.001$).

3.3. Mediation analysis

Results from mediation analysis are depicted in Fig. 2 and Table 3. In the overall mediation model, alcohol-related social media exposures, as measured by a single latent variable, were positively associated with intentions to seek alcohol treatment ($\beta = 1.09$, $p < 0.001$). Both attitudes toward alcohol treatment effectiveness and alcohol treatment stigma significantly mediated the association between alcohol-related social media exposures and intentions to seek alcohol treatment, while perceived behavioral control did not. Attitudes toward alcohol treatment effectiveness mediated 25.5% of the total effect of alcohol-related social media exposures on intentions to seek alcohol treatment, and alcohol treatment stigma mediated 6.1% of the total effect. Regarding the overall model fit, the RMSEA (0.05), CFI (0.91), and SRMR (0.04) suggested a good model fit (Kline, 2016; Schumacker & Lomax, 2010).

Table 2
Linear regression analyses assessing associations between alcohol-related social media exposures and intentions to seek alcohol treatment (N = 499).

Variable	Coef.	SE
Social media exposures		
Peer pro-drinking posts	−0.67[**]	0.21
Peer posts about alcohol-related negative consequences	0.69[**]	0.23
Peer posts about positive experiences with alcohol treatment or involvement in recovery	1.23[***]	0.21
Alcohol use disorder (AUDIT score)	0.09[***]	0.02
Sociodemographics		
Gender		
Female	–	–
Male	0.56[*]	0.24
Race/ethnicity		
Non-Hispanic White	–	–
Non-Hispanic Black	0.90[*]	0.41
Asian and others	0.28	0.42
Hispanic	0.87[**]	0.33
Age	0.02	0.01
Marital status: married	0.85[**]	0.33
Education		
Less than high school	–	–
High school	−0.87[*]	0.34
College	−0.44	0.33
Higher than college	−0.90	0.47
Unemployment	−0.05	0.37
Income		
Less than $25,000		
$25,000 - $50,000	0.47	0.34
$51,000 - $75,000	0.82[*]	0.40
$76,000 - $100,000	1.25[**]	0.42
$101,000 and above	1.28[**]	0.47

Coef.: unstandardized β coefficient; SE: standard error.
$R^2 = 36.68\%$.
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

4. Discussion

Findings herein assert alcohol-related social media exposures (i.e., peer pro-drinking posts, peer alcohol-related negative consequence posts, and peer posts about positive experiences with alcohol treatment or involvement in recovery) are significantly associated with intentions to seek alcohol treatment among a sample of adult non-treatment seeking individuals with AUD. Moreover, associations between alcohol-related social media exposures and intentions to seek alcohol treatment were mediated by attitudes toward alcohol treatment effectiveness and alcohol treatment stigma.

In line with our a priori hypothesis, self-reported exposure to peer pro-drinking social media content was negatively associated with intentions to utilize alcohol treatment services among our sample of heavy drinking adults. Prior research contends exposure to alcohol-related social media posts is common, even among youth and young adults (Curtis et al., 2018; Jernigan et al., 2017; Litt et al., 2018). The vast majority of alcohol-related social media content portrays alcohol in a positive manner, often glamorizing hazardous drinking behaviors (e.g., intoxication, blacking out), while rarely depicting negative alcohol-related consequences (Cavazos-Rehg et al., 2015; Curtis et al., 2018; Litt et al., 2018; Lobstein et al., 2017; Moreno & Whitehill, 2014; Morgan et al., 2010; Noel et al., 2020; Riordan et al., 2019; Russell et al., 2021; Sudhinaraset et al., 2016). Exposure to this pro-drinking content among individuals with AUD may serve to normalize their heavy drinking behaviors, thereby muting perceptions of alcohol treatment need, further contributing to the already large treatment gap.

Moreover, machine learning algorithms employed by social media platforms to determine what content is made visible and to whom, while kept mostly secret, are in part based on a user's previous posts and prior engagement with other content (Bishop, 2019). Prior research has established that posting about and engaging with alcohol-related social media content is associated with alcohol use and alcohol-related

Table 3
Mediation effect of attitude toward alcohol treatment, alcohol treatment stigma, and perceived behavioral control on the association between alcohol-related social media exposures and intentions to seek alcohol treatment (N = 499).

Variable	Coef. or factor loading	SE
Measurement model (Latent variable: social media exposures)		
Peer pro-drinking posts	1 (constrained)	–
Peer posts about alcohol-related negative consequences	1.07***	0.05
Peer posts about positive experiences with alcohol treatment or involvement in recovery	1.08***	0.05
Mediation model (Predictor: social media exposures)		
Attitude toward alcohol treatment effectiveness	1.33***	0.20
Alcohol treatment stigma	0.41***	0.08
Perceived behavioral control	0.87***	0.18
Structural Model (Outcome variable: intentions to seek alcohol treatment)		
Social media exposures	1.09***	0.21
Attitude toward alcohol treatment	0.32***	0.04
Alcohol treatment stigma	0.25*	0.10
Perceived behavioral control	0.05	0.04
Covariates:		
Alcohol use disorder	0.07***	0.02
Gender		
Female	–	–
Male	0.62**	0.23
Race/ethnicity		
Non-Hispanic White	–	–
Non-Hispanic Black	0.89*	0.39
Asian and others	0.48	0.39
Hispanic	0.79*	0.30
Age	0.02	0.01
Marital status: married	0.57*	0.26
Education		
Less than high school	–	–
High school	−0.58	0.32
College	−0.43	0.32
Higher than college	−0.86*	0.44
Unemployment	−0.11	0.35
Income		
Less than $25,000	–	–
$25,000 - $50,000	0.09	0.32
$51,000 - $75,000	0.55	0.38
$76,000 - $100,000	0.95*	0.39
$101,000 or above	1.11*	0.44

Coef.: unstandardized β coefficient; SE: standard error.
$*p < 0.05$, $**p < 0.01$, $***p < 0.001$.

negative consequences (Curtis et al., 2018; Litt et al., 2018). Thus, individuals who are most likely to have current AUD, or to develop AUD in the future, presumably represent those most likely to post about and engage with alcohol-related social media content. In turn, these algorithms intended to capture users' attention may be targeting pro-alcohol content to individuals with AUD. Importantly, some of these individuals with current AUD may be in the process of contemplating, preparing, or to taking actions with regard to accessing alcohol treatment or attempting to quit or cut down on their drinking (Carbonari & DiClemente, 2000). It is unlikely that algorithms are designed to react in real-time when individuals with AUD make a decision to quit or cut down on their drinking, but rather it can be expected that the algorithms are likely to continue to infiltrate such individuals with pro-alcohol posts and digital alcohol advertisements, which may serve as a further barrier to alcohol treatment and recovery engagement. Such considerations warrant further investigation and may serve to inform media policy related to algorithmic accountability of social media platforms (Hunt & McKelvey, 2019).

Among the current heavy drinking sample, self-reported exposure to peer social media posts about alcohol-related negative consequences was positively associated with intentions to seek alcohol treatment. However, prior studies estimate that between 4 and 7% of alcohol-related social media posts depict any alcohol-related negative consequences, and many posts that do incorporate depictions of such consequences do so in a humorous fashion, downplaying their negative effects and portraying an unrealistic picture of hazardous drinking behaviors (Cavazos-Rehg et al., 2015; Russell et al., 2021). As such, it may be of societal benefit for public health agencies and professionals to increase social media activity describing negative consequences often associated with hazardous drinking behaviors. Future qualitative and quantitative research could examine the types and nature of posts capturing negative consequences that best promote health behavior change.

In line with our second hypothesis, self-reported exposure to peer social media posts about positive experiences of engaging with alcohol treatment or involvement in recovery held a significantly positive relationship with intentions to seek alcohol treatment. As previously mentioned, published research has highlighted how individuals in addiction recovery are using social media platforms to provide and receive support for quitting or cutting down on drinking or drug use (Bunting et al., 2021; Colditz et al., 2020; D'Agostino et al., 2017; Russell et al., 2021; Sowles et al., 2017). While the benefits of using traditional social media platforms (e.g., Facebook, Reddit, and TikTok) as an online recovery support are still being clinically investigated, in terms of their efficacy for helping individuals to quit or cut down on their drinking, results from this study suggest that exposure to digital recovery narratives (i.e., first-person lived experience accounts of addiction and recovery) may serve to normalize AUD help-seeking behaviors and enhance intentions to seek alcohol treatment. Thus, future investigations could test whether a social media-delivered intervention designed to proliferate exposure to pro-treatment and recovery content among heavy drinkers can effectively enhance intentions to seek alcohol treatment, and in turn, lead to reductions in alcohol consumption.

Finally, results from mediation analyses suggest effects of alcohol-related social media exposures on intentions to seek AUD treatment among heavy drinkers is partially explained by respondent's attitudes about alcohol treatment effectiveness, as well as beliefs about individuals receiving alcohol treatment. Along these lines, it may be beneficial for future social media-delivered health communication interventions intended to enhance AUD treatment and recovery uptake to tailor intervention content to specifically enhance understanding of various alcohol treatment options and their effectiveness. Such content could seek to positively portray successful engagement with evidence-based alcohol treatment and recovery-support services, including formal inpatient/outpatient rehabilitation, medications to help people stop or reduce their drinking (e.g., naltrexone, acamprosate, disulfiram), behavioral/psychological treatments provided by licensed therapists aimed at changing drinking behavior (e.g., brief interventions, such as motivational interviewing; contingency management; cognitive behavioral therapy; mindfulness-based therapies), and mutual-help organizations (e.g., Alcoholics Anonymous, SMART Recovery; Witkiewitz et al., 2019).

4.1. Limitations

This study was not without limitations. First, data were cross-sectional in nature as they were collected at a single time point, and thus, results are to be interpreted as correlational, rather than causational. Future research implementing longitudinal designs to explore the impact of alcohol-related social media exposures on intentions to seek alcohol treatment among heavy drinkers is warranted. Second, we relied on self-report data, including for alcohol use, exposure to alcohol-related social media content, and intentions to seek alcohol treatment. It is possible that alcohol use levels were underreported or that intentions to seek alcohol treatment were overreported due to social desirability biases. Moreover, recall of past-month frequency of exposure to various types of alcohol-related social media posts across different social media platforms may be difficult. To mitigate this limitation, we incorporated prompted recall by including examples of each

type of alcohol-related social media post to facilitate self-report of such data. Finally, there are limitations associated with the use of Qualtrics Panels as a data collection tool. Qualtrics Panels samples represent nonprobability samples of the general population (i.e., convenience samples), and thus, the study sample is limited in terms of external validity and generalizability to the general population and not to be presented as nationally representative. Despite these limitations, this study provides unique insights into the relationship between alcohol-related social media exposures and their associations with alcohol treatment-seeking intentions of adults with AUD, highlighting several areas for future research.

4.2. Conclusions

This study addresses a gap in the literature by providing valuable insights into the relationship between alcohol-related social media exposures and treatment-seeking intentions of adults with AUD. Exposure to peer pro-drinking posts on social media was negatively associated with alcohol treatment-seeking intentions. However, exposure to peer posts about positive experiences of engaging with alcohol treatment or involvement in recovery was positively associated with intentions to seek treatment. Furthermore, associations between alcohol-related social media exposures and intentions to seek alcohol treatment were mediated by attitudes toward alcohol treatment effectiveness and alcohol treatment stigma. More research is needed to better understand whether a social media-based intervention leveraging digital recovery narratives (i.e., first-person lived experience accounts of AUD and recovery) could enhance attitudes about alcohol treatment effectiveness and reduce stigma associated with receiving alcohol treatment, and in turn, enhance treatment uptake among individuals with AUD.

5. Role of funding source

6. Contributors

AMR conceptualized and obtained funding for the present study. AMR, BGB, PMM, AEB, and HCL designed the study. HCL and TSO conducted statistical analyses. AMR wrote the initial draft of the manuscript. BGB, HCL, AEB, and PMM provided mentorship throughout and helped with interpretation of findings and critical reviews of the manuscript. All authors contributed to and have approved the final manuscript.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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