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Understanding Lay Assessments of Alcohol Use Disorder: Need for Treatment and Associated Stigma

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Abstract

Aims: Three-quarters of people with an alcohol use disorder in the USA never receive treatment. Our understandings of who receives care are informed by sociological perspectives, theories and models, each of which discuss the role of lay people's understanding of illness. However, comparatively little work has been done to unpack the cognitive processes underlying lay assessment. In the context of the Framework Integrating Normative Influences on Stigma (FINIS), we aim to understand key factors guiding lay people's stigmatizing attitudes, perceptions and assessments of alcohol use disorder behaviors.
Methods: Lay people read a vignette depicting a male or female adult with a diagnosable alcohol use disorder, along with either a causal life-event explanation for the alcohol use disorder behaviors or no explanation. They then made judgments of the need for treatment, psychological abnormality and the stigma they felt toward the person depicted.
Results: Causal life-event explanations decreased lay judgments of the need for treatment, psychological abnormality and stigma.
Conclusions: The results suggest that the availability of a causal life-event explanation may have a complex effect on lay judgments, decreasing the likelihood of recommending treatment for alcohol use disorders, yet simultaneously reducing stigmatizing perceptions (and presumably social distance).

INTRODUCTION

According to results from the National Epidemiologic Survey on Alcohol and Related Conditions, an estimated 17.8 million people have an alcohol use disorder (AUD) in the USA, yet only 24.1% of these obtain treatment (Hasin *et al.*, 2007). Much interdisciplinary work has sought to understand how people come to seek formal care and the barriers to treatment seeking, and suggests that lay assessment plays a key role. The Framework Integrating Normative Influences on

Stigma (FINIS) reveals that labeling, stigma and cognitive responses of community members jointly affect individuals' experiences with treatment (Pescosolido *et al.*, 2008). More specifically, lay peer-support facilitates treatment seeking, whereas perceiving stigma from lay peers impedes it (Ballon *et al.*, 2004; Schomerus *et al.*, 2011; Andréasson *et al.*, 2013; Zinzow *et al.*, 2013; Perry and Pescosolido, 2014). To better understand the impact of lay peer assessment on treatment seeking by people with AUDs, we draw on multiple theoretical perspectives across disciplines.

Alcohol use disorders: lay assessment, labeling, stigma and treatment seeking

Excessive alcohol use is labeled an alcohol use *disorder* (as described by Modified Labeling Theory; Link *et al.*, 1989), by a number of actors, both formal (e.g. physicians, mental health counselors) and informal (e.g. community members, family, peers, other lay people). Indeed, in large-scale vignette studies administered via the General Social Survey (GSS), approximately half (49%) of participants identified AUD symptoms as evidence of mental illness (Link *et al.*, 1999).

The AUD label, once applied, brings with it positive and negative societal responses. One positive societal response to labels is captured by increased rates of formal treatment (Gove and Fain, 1973; see also Rosenfield, 1997). As detailed in the Network Episode Model (Pescosolido, 1992, 2006; Pescosolido and Boyer, 1999; Perry and Pescosolido, 2014), labeling by peers, family, community members, and professionals may facilitate seeking and access to formal treatment, particularly by those with AUDs (Cunningham *et al.*, 1994; Jakobsson *et al.*, 2005). On the other hand, negative societal responses to labels include stigma, truncated social networks, barriers to economic and social resources, and internalized negative feelings (Link *et al.*, 1989; Rosenfield, 1997; Jakobsson *et al.*, 2005; Glass *et al.*, 2013). Lay people are more likely to perceive adults with AUDs as dangerous than adults with other psychiatric disorders; furthermore, people endorse a desire for comparatively greater social distance from them, and this tendency has not decreased in recent years (Pescosolido *et al.*, 2010). Only adults with drug dependence are seen as more dangerous by lay peers and elicit preferences for greater social distance than adults with AUDs (Link *et al.*, 1999; Corrigan *et al.*, 2009; Parcesepe and Cabassa, 2013). Unfortunately, AUDs are also more highly stigmatized than many other common disorders (Schomerus *et al.*, 2011; Parcesepe and Cabassa, 2013). Stigma hinders treatment seeking at both interpersonal and systems levels (Corrigan *et al.*, 2014), and has been identified as a major barrier to help-seeking by people with AUDs (Andréasson *et al.*, 2013).

Case study and survey research shows how lay peers are central players in influencing treatment seeking by people with AUDs. Lay peers may urge peer treatment seeking and adherence by preventing family members with an AUD from living at home, from seeing their children, or simply severing social contact until the person enters treatment and/or consistently abstains from alcohol (Naughton *et al.*, 2012). Lay peers conversely discourage treatment seeking by making the person feel guilty or unable to set aside responsibilities when entering treatment (Poole and Isaac, 2001), or ashamed for discussing alcohol abuse with non-family members (and these factors impact women with children in particular; Beckman and Amaro, 1986). Lay peers may even encourage alcohol consumption because it is a shared activity or makes the person more likeable (Schonbrun *et al.*, 2011). Thus, we conducted the current research because little is known about how lay people reason about AUD treatment need and the cognitive processes underlying lay peers' AUD-related stigmatizing attitudes.

Causal life-event explanations influence perceptions of mental disorder symptoms

Some clues about the cognitive or mental processes underlying lay peers' attitudes toward AUDs can be drawn from work on lay reasoning about mental illness. Lay people do attempt to understand problematic behaviors in others, and spontaneously generate their own explanations for odd behaviors they have observed (Hastie *et al.*, 1990). Research in cognitive science has documented an *understanding-normality effect* in behavior assessment, wherein a causal explanation makes an unusual event or behavior seems more prevalent or normal (Meehl, 1973; Kahneman and Tversky, 1982; Koehler, 1991; Ahn *et al.*, 2003; Kim *et al.*, 2012). Subsequent work with practicing clinicians showed that a plausible, causal explanation for disordered behaviors (Ahn *et al.*, 2003) gives clinicians the intuitive sense of *understanding* them (Kim *et al.*, 2012). This perception of understanding, in turn, predicts clinicians' inferences that the behaviors are less abnormal and less in need of treatment, even though the behaviors themselves are the same (Kim *et al.*, 2012).

In one study, lay people and clinicians considered the hypothetical case of a person with an artificial disorder (e.g. frequently has insomnia, has trouble remembering the names of objects, and has episodes of extreme anxiety; Ahn *et al.*, 2003). People who learned a plausible, causal life-event explanation for the symptoms (e.g. recent workload stress) rated them as significantly less abnormal than those who did not. In follow-up work with lay people, Kim and LoSavio (2009) showed that hypothetical people with randomly selected symptoms from the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (DSM–IV–TR; American Psychiatric Association, 2000) were judged to be less in need of treatment when given a plausible, causal, externally-controlled life-event explanation for the symptoms (e.g. being drafted into the army) than when given a very similar, but internally-controlled, explanation (e.g. voluntarily enlisting in the army).

Causal attributions for AUDs

Whether the *understanding-normality effect* applies to people's perceptions of AUD cases has not yet been examined. This is not a straightforward question, as much of the work on the *understanding-normality effect* described thus far has relied on vignettes describing artificial disorders. Moreover, previous research indicates that lay people tend to hold one of two strong a priori beliefs about the core cause of AUDs, the 'moral model' or the 'medical model'. The prohibition-era 'moral model' claims that people drink because they want to (Caetano, 1987). Thus, drinking behaviors are under the person's control, along with the ability to stop them (Brickman *et al.*, 1982), and an AUD results from internal factors (e.g. weakness of resolve; Sigelman *et al.*, 1992). On the other hand, the 'medical model' of alcoholism, popularized by social programs in the 1950s, labels alcoholism as a disease (Schneider, 1978), implying that an AUD results from factors external to the person's mental control. Lay people today continue to strongly endorse both medical and moral models of AUD causation; furthermore, attributions to both models even increased between 1996 and 2006 (Pescosolido *et al.*, 2010). Other models have also been found to have some degree of lay support. For example, the sociocultural model (Furnham and Lowick, 1984) suggests, among other things, that AUD arises among people who socialize with other drinkers.

Yet studies using GSS vignettes showed that lay people endorse a wide range of causal attributions of AUD symptoms presented in the vignettes (e.g. that alcohol dependence is the product of an inherited or genetic problem, the way the person was raised, a chemical imbalance, stress, etc.). These attributions predict labeling of symptoms as illness, referrals to treatment, perceived likelihood of violence, and associated stigma (Martin *et al.*, 2000; Link and Phelan, 2001; Pescosolido *et al.*, 2010).

The current question is whether plausible, causal, externally-controlled life-event explanations (e.g. a recent car accident leading to the loss of a limb) affect how lay peers perceive a person with an AUD. That is, in this study, we examine lay *perceptions* of another

person's AUD symptoms given a major recent life event (irrespective of whatever might be the true cause of those symptoms). We propose that lay people give substantial causal weight to such life events. We hypothesized that when people are presented with a life-event explanation for an AUD in a specific person, it will supersede their existing a priori notions of what causes AUDs in general. That is, people will downplay their existing beliefs about the causation of AUDs when a life-event cause is presented with respect to a particular AUD case. Indeed, students who drink alcohol in excess employ a variety of neutralization techniques to downplay suggestions that their behavior is unhealthy (Piacentini *et al.*, 2012).

A reasonable alternative hypothesis is that when lay people are presented with a life-event explanation for an AUD, they will not give that life-event explanation appropriate consideration because they feel they have already explained the AUD with other factors (e.g. the person's bad character; a medical condition). That is, people may not accept the life-event explanation as a key cause of the AUD because they believe they already know what caused it. Indeed, there is empirical evidence for a discounting effect in causal beliefs, such that people fail to sufficiently incorporate new potential causes that are introduced after they have already accepted a different cause (McClure, 1998).

In the current experiment, we focused on three key lay judgments that can reasonably be expected to influence whether lay people ultimately encourage their peers with AUD behaviors to seek treatment. These lay judgments reflect the cognitive responses described in the FINIS Model (Pescosolido *et al.*, 2008). The cognitive processes, in turn, impact stigma, along with the application of a label that impacts stigma. Specifically, we asked whether an explanation for AUD behaviors will influence lay judgments of: (a) whether a person with an AUD needs treatment, (b) estimated stigma toward a person with an AUD, and (c) the psychological abnormality of a person with an AUD. The measurements of treatment need and stigma are key to our understanding of lay assessments of AUD treatment need, and the measurement of psychological abnormality judgments is intended to account for lay peers' perceptions of deviations from the normal range of human behavior that may initially alert them to a person's need to obtain AUD treatment. Although the precise mechanisms by which these three judgments lead to concrete action in the real world are outside the scope of this study, the current work represents an initial and critical step toward understanding how cognitive factors in lay peers ultimately influence treatment seeking by people with AUDs.

Gender typicality of AUDs

Men are much more likely than women to abuse or become dependent on alcohol over their lifetimes (Grant, 1996) and lay people associate AUDs more strongly with men than with women (Wirth and Bodenhausen, 2009). Rosenfield (1982) demonstrated that people with gender atypical disorders experience even more severe stigmatizing societal reactions than their gender typical counterparts, the phenomenon of 'deviant deviance'. On the other hand, Keyes *et al.* (2010) demonstrated that seeking treatment for alcoholism is particularly stigmatized in men (compared to seeking treatment for other disorders).

In the current study, we ask whether the presence of an explanation influences judgments differently for gender typical and gender atypical cases. One hypothesis is that judgments of gender atypical cases will be more strongly influenced by an explanation than judgments of typical cases. People tend to be especially motivated to search for explanations for atypical combinations of behaviors (e.g. *highly-educated*

carpenter, Hastie *et al.*, 1990; Kunda, 1990), as they are seen as unusual and surprising. On the other hand, it would also be reasonable to hypothesize that once perceived understanding is increased, it influences judgments to the same degree, regardless of typicality.

METHODS

This study was approved by the Northeastern University Institutional Review Board. Before taking part, all participants signed an online consent form explaining the risks and benefits inherent in participating in the study.

Participants

We recruited adults who were (a) currently living in the USA and (b) had no professional training or experience in AUD diagnosis. One hundred seventy-eight lay adults (103 female) participated in the main study; 97 were recruited from Craigslist.org for a $50 Amazon.com gift certificate raffle entry, and 81 were undergraduate students participating for partial introductory psychology course credit. Fifteen of those recruited from Craigslist.org indicated that they were full-time college students. An additional 43 lay adults (24 female) recruited from Craigslist.org participated in a pilot study. Although this sample was not nationally representative, it satisfied our selection criteria as described above; moreover, the use of a website to recruit participants increased the diversity of the sample. Specifically, whereas undergraduate samples typically offer a relatively narrow scope of age, race, education, and socio-economic background (Henrich *et al.*, 2010), participant samples recruited online can be even more racially diverse than nationally representative samples (Buhrmester *et al.*, 2011). In our combined sample, participants reported a mean age of 28 years (range: 18–69), and self-identified as White (62%), Asian (19%), African American (7%), American Indian or Alaska Native (3%), or multiple races (3%; the remaining participants declined to report race). In addition, 10% self-identified as Hispanic or Latino.

Materials

Because females and males with AUDs may be perceived differently (Rosenfield, 1982), we manipulated vignette gender by referring to 'Karen' versus 'Brian' and using appropriate pronouns. Lay people's perceptions of these names are equivalent on dimensions including attractiveness, intellectual competence, race and age (Kasof, 1993). We used the AUD behavior vignette from the General Social Survey (GSS) MacArthur Mental Health Module, which formally meets *Diagnostic and Statistical Manual of Mental Disorders*, *Fourth Edition* (*DSM–IV*; American Psychiatric Association, 1994) criteria. The AUD vignette, from Link *et al.* (1999), was designed to describe *DSM-IV* (American Psychiatric Association, 1994) Alcohol Dependence; lay people were previously shown to easily identify this vignette as such. To allow for continuity between our findings and Link *et al.*'s (1999) seminal work, we used the identical vignette. In addition, we considered how one might view the AUD vignette with respect to how the condition is defined in the more recent *DSM-5* (American Psychiatric Association, 2013). In this latest version of the manual, Alcohol Dependence and Alcohol Abuse have been replaced with Alcohol Use Disorder (AUD), which is diagnosed by meeting two or more of a list of eleven criteria. In *DSM-5* (American Psychiatric Association, 2013), meeting any two to three criteria qualify an individual for mild AUD, four to five for moderate AUD, and six or more for severe AUD. Depending on how a lay person might interpret the Link *et al.* (1999) vignette, the individual in the vignette meets anywhere from

Table 1. Study materials: Behavior vignette, explanations, key dependent measures and background knowledge measures

Item	Text
Alcohol use disorder (AUD) behavior vignette	Karen* has started to drink more than her usual amount of alcohol. In fact, she has noticed that she needs to drink twice as much as she used to, in order to get the same effect. Several times, she has tried to cut down, or stop drinking, but she can't. Each time she has tried to cut down, she became very agitated, sweaty, and she couldn't sleep, so she had another drink. Her family has complained that she is often hung-over, and has become unreliable—making plans one day, and canceling them the next.
Explanation: 'loss of a limb'	Karen was recently in a serious accident in which she, as a pedestrian, was struck by a car. Karen awoke with no memory of the accident to discover that doctors had been forced to amputate her right leg. She eventually recovered her memory, but Karen's acceptance of the amputation and the resulting rehabilitation were long and painful processes. Due to the loss of her leg, Karen was forced to quit her previous job and has been unable to find another. Karen can no longer play with her young children as before, or easily visit her family in a neighboring city.
Explanation: 'combat'	Karen served in the military in Iraq. Karen loathed the violence that she witnessed there, and witnessed firsthand the deaths of several friends in her unit. On one occasion, swept up by the group spirit, she killed a civilian when it might not have been necessary for her survival to do so. This seemed to Karen to be totally out of keeping with her character. Karen finished her tour of duty and was then honorably discharged from the military. Since she returned home, she has been unable to find work. Karen has been living on various forms of government assistance.
Key dependent measure: need for treatment	Given what you know about Karen and her behaviors, to what extent would you recommend Karen seek out treatment for alcoholism specifically (as opposed to treatment for her experiences or behaviors in general)? *Please indicate your response on a scale of 1–9, where 1 = definitely recommend treatment for alcoholism specifically, and 9 = definitely not recommend treatment for alcoholism specifically.*
Key dependent measures: stigma	How willing would you be to: Move next door to Karen? Spend an evening socializing with Karen? Make friends with Karen? Start working closely with Karen? Have Karen marry into your family? *Please indicate your response on a scale of 1–9, where 1 = definitely not, and 9 = definitely.*
Key dependent measure: psychological abnormality	In your opinion, how psychologically normal or psychologically abnormal are Karen's behaviors? *Please indicate your response on a scale of 1–9, where 1 = very psychologically abnormal, and 9 = very psychologically normal.*
Background knowledge measure: general population AUD prevalence	How rare or common are behaviors like Karen's in the US population at large? *Please indicate your response on a scale of 1–9, where 1 = very rare behaviors, and 9 = very common behaviors.*
Background knowledge measure: AUD prevalence in females	How rare or common are behaviors like Karen's among women in the US population? *Please indicate your response on a scale of 1–9, where 1 = very rare behaviors, and 9 = very common behaviors.*
Background knowledge measure: AUD prevalence in males	How rare or common are behaviors like Karen's among men in the US population? *Please indicate your response on a scale of 1–9, where 1 = very rare behaviors, and 9 = very common behaviors.*

*For brevity, only the female versions of all materials are listed here. The male versions all referred to 'Brian' instead of 'Karen', and incorporated male pronouns.

three to seven of the *DSM-5* criteria. Thus, the person described in our studies may be perceived as having mild, moderate, or severe AUD (see Table 1).

Two plausible, externally-controlled, life-event explanations were selected following a pretest of 11 descriptions (see Supplementary Material). These described the loss of a limb and a combat experience (see Table 1), and were pre-rated by a separate group of lay participants as plausible explanations of AUD behaviors and equally plausible as applied to men and women with an AUD.

The need for treatment, stigma and psychological abnormality dependent measures were modified from Kim and LoSavio (2009), Link and Phelan (2001) and Ahn *et al.* (2003), respectively (see Table 1). All dependent measure ratings were made on 1–9 Likert scales. The need-for-treatment measure asked people to judge another person's need for AUD treatment (as opposed to any general kind of care),

enabling us to precisely gauge people's perceptions of whether the AUD behaviors merit treatment, rather than whether the life-event itself merits treatment. To measure stigma, we used the Attitudinal Social Distance Scale (Link and Phelan, 2001), a standard 5-item questionnaire for measuring desired social distance from another person. We used a 1–9 scale (as opposed to the 1–4 scale used in past work with this measure) to match the range used for our other two measures. The psychological abnormality measure asked people to judge *psychological abnormality* (as opposed to *abnormality*, as in past work) to ensure that participants understood that we were not referring to other ways in which a person could be abnormal (e.g. abnormal purely in the sense that the behavior is statistically rare).

We also measured participants' prior background knowledge of the prevalence of AUDs in the USA, and among women and among men in the USA (please see Table 1).

Design

We employed a 2 (Explanation Condition: Explanation Present, Explanation Absent) × 2 (Explanation Type: 'Loss of a Limb', 'Combat') × 2 (Vignette Gender: Female, Male) × 2 (Participant Gender: Female, Male) × 2 (Student Status: Current, Non-Student) between-subjects design. Explanation condition refers to whether or not there was a causal explanation preceding the AUD behavioral vignette. Explanation Type refers to the two causal explanations, one of which participants saw if they were in the explanation present condition. Data from explanation absent conditions were assigned by random permutation into 'Loss of a Limb' and 'Combat' conditions for analyses. Vignette gender refers to the gender of the person described in the AUD vignette. Approximately equal numbers of participants completed each of the between-subjects conditions. Student status refers to whether each participant was a current college student or not.

Procedure

All participants took part online via the internet-based software Qualtrics (Qualtrics Labs Inc., Provo, UT, USA). On average, participants took ~15 min to complete the survey; no time restriction was employed. Participants in the explanation present conditions were shown one of the explanations above the AUD behavior vignette; the explanation was labeled 'recent past' and the AUD behavior vignette was labeled 'current behaviors'. Participants in the explanation absent conditions were shown only the AUD behavior vignette, labeled 'current behaviors'.

The need for treatment, stigma, and psychological abnormality questions were presented on separate pages, in randomized order, with the vignette and explanation (if presented) reprinted for reference above each question. Next, on separate pages, participants made the estimates of AUD prevalence. As an example of AUD behaviors, the AUD behavior vignette, without explanation, was reprinted on each of these pages for reference. Participants provided basic demographic information and were debriefed.

RESULTS AND DISCUSSION

Main findings

Three 2 (Explanation: Present, Absent) × 2 (Explanation Type: 'Loss of a Limb', 'Combat') × 2 (Vignette Gender: Female, Male) × 2 (Participant Gender: Female, Male) × 2 (Student Status: Current, Non-Student) univariate analyses of variance were conducted on judgments of the need for treatment, stigma, and psychological abnormality, respectively. Following past work, the five stigma ratings were averaged into a composite score for analyses. There were no main effects or interactions involving student status (all $Ps \geq 0.110$). For clarity, the means reported below were converted so that higher numbers indicate greater treatment need, more estimated stigma, and greater psychological abnormality.

The overarching question of this work was whether newly introduced causal explanations lead people to downgrade judgments of the need for treatment, stigma, and psychological abnormality regarding a person with an AUD (see Table 2). First, we found that people's need-for-treatment judgments regarding a person with AUD behaviors were lower with a causal life-event explanation ($M = 6.20$, SD = 2.42) than without ($M = 7.53$, SD = 1.91; $F[1,146] = 14.158$, $P < 0.001$, $\eta_p^2 = 0.088$). That is, despite general widespread acceptance of a priori attributions for AUDs (Schneider, 1978; Caetano, 1987; Sigelman *et al.*, 1992), we found that a causal life-event explanation decreases the likelihood that lay peers will find a person's AUD

Table 2. Mean ratings for the key dependent measures

	Explanation present	Explanation absent	*P*-values
Need for treatment	6.20 (2.42)	7.53 (1.91)	<0.001
Stigma (composite)	5.60 (1.89)	6.40 (1.76)	=0.007
Psychological abnormality	4.86 (2.25)	5.55 (2.08)	=0.045

Note: For the purposes of reporting, the means have been converted so that higher numbers indicate greater treatment need, more stigma and greater psychological abnormality. Standard deviations are in parentheses.

behaviors in need of treatment (potentially decreasing that person's likelihood to seek and adhere to treatment). We speculate that deciding behaviors are less abnormal is a judgment underlying the decision to reduce treatment recommendations. That is, it would be reasonable for a lay person who feels there is little or nothing wrong with a particular behavior to conclude that there is little or no need to treat it.

Second, stigma estimates regarding a person with AUD behaviors were lower with a causal life-event explanation ($M = 5.60$, SD = 1.89) than without ($M = 6.40$, SD = 1.76; $F[1,146] = 7.616$, $P = 0.007$, $\eta_p^2 = 0.050$). To our knowledge, this is the first controlled experimental demonstration of the *understanding-normality* effect in stigma judgments toward people with AUDs. Given that perceived stigma from peers prevents AUD treatment seeking (Andréasson *et al.*, 2013), reduced lay feelings of stigma resulting from a life-event causal explanation may make it more likely that lay people with an AUD will seek treatment without fear of stigma. Reduced stigmatizing attitudes toward those with an AUD, in turn, are known to result from greater social closeness (Abraham *et al.*, 2013), another factor that may influence AUD treatment seeking. There was a marginally significant interaction of explanation type and participant gender for stigma estimates ($F[1,146] = 3.543$, $P = 0.062$, $\eta_p^2 = 0.024$). Follow-up Bonferroni-corrected independent samples *t*-tests were non-significant (all $Ps > 0.078$), indicating that explanation type did not differently affect stigma estimates by participant gender; nor did participant gender differently affect stigma estimates by explanation type.

Stigma has been highlighted as a major barrier to treatment seeking for not only AUDs, but also for other conditions such as HIV/AIDS and other sexually transmitted diseases (Lichtenstein, 2003; Mawar *et al.*, 2005; Pescosolido *et al.*, 2008; Keyes *et al.*, 2010). At present, there is no single effective stigma reduction strategy across conditions (Heijnders and van der Meij, 2006). More research is urgently needed to identify effective stigma reduction strategies; for example, by improving public knowledge of AUDs and treatment options (Wallhed-Finn *et al.*, 2014). Strategies shown to have small-scale, short-term effects need to be tested in larger populations, disseminated to the public, and generally brought to scale (as in Sengupta *et al.*, 2011).

Third, psychological abnormality judgments regarding a person with AUD behaviors were lower with a causal life-event explanation ($M = 4.86$, SD = 2.25) than without ($M = 5.55$, SD = 2.08; $F[1,146] = 4.070$, $P = 0.045$, $\eta_p^2 = 0.027$). Having a causal life-event explanation may reduce the likelihood that lay people will encourage a peer to seek AUD treatment, as beliefs about psychological abnormality can bear strongly on whether disordered behaviors seem treatment-worthy. Indeed, clinicians assess psychological abnormality to indicate whether symptoms need treatment (Kirmayer and Young, 1999), and one report has indicated that lay people think 'psychologically abnormal' essentially means 'needs treatment' (although they also think it indicates

someone to be avoided; Haslam and Giosan, 2002). In fact, in the current study, psychological abnormality judgments were reliably positively correlated with need-for-treatment judgments ($r = 0.185$, $P = 0.013$) and with stigma judgments ($r = 0.164$, $P = 0.029$; collapsed across conditions). However, need-for-treatment and stigma judgments were not correlated ($r = 0.071$, $P = 0.343$); we discuss implications of this below.

Many people with an AUD do not seek treatment, and lay people encourage and discourage AUD treatment in a variety of ways. Can lay perceptions of peers with AUDs be influenced by something as seemingly straightforward as an explanation? The shifts in judgments obtained between conditions in this study indicate that they can, but in complex ways. Plausible, causal life-event explanations reduce feelings of stigma toward people with AUDs, potentially encouraging treatment seeking by people with AUDs. Yet these explanations simultaneously reduce perceptions of psychological abnormality and treatment need, potentially discouraging lay people from labeling their peers as people with an AUD who need treatment. More research will be needed to determine whether, and precisely when, life-event explanations facilitate or prevent AUD treatment seeking and peer support.

Influence of gender on lay perceptions

We did not find an interactive influence of explanation presence and vignette gender on judgments of people with AUDs; however, we did find some influence of vignette gender. There was a main effect of vignette gender in the psychological abnormality ratings ANOVA, such that a female with AUD behaviors was perceived as *less* psychologically abnormal overall ($M = 4.77$, SD = 2.19) than a male exhibiting the exact same (i.e. word-for-word) AUD behaviors ($M = 5.64$, SD = 2.18; $F[1,146] = 6.562$, $P = 0.011$, $\eta_p^2 = 0.043$). A female with AUD behaviors ($M = 5.73$, SD = 2.03) also received marginally *lower* stigma estimates overall than a male with identical AUD behaviors ($M = 6.27$, SD = 1.68; $F[1,146] = 3.482$, $P = 0.064$, $\eta_p^2 = 0.023$).

These findings are inconsistent with past seminal work (e.g. Rosenfield, 1982), and were obtained even though our participants were aware of the actual gender differences in the prevalence of AUDs in the USA (see below). One possible explanation is that the outcomes of female drinking are not generally perceived to be as severe as the outcomes of male drinking (e.g. violence; Kelly and Campbell, 1997). In addition, there is a growing general awareness of women with AUDs, such that they are beginning to be seen as much in need of treatment as are men with AUDs (Walitzer and Dearing, 2006; Vannicelli and Nash, 1984). Indeed, in the current research, AUD behaviors were seen as equally in need of treatment in a male and female ($F[1,146] = 1.765$, $P = 0.186$, $\eta_p^2 = 0.012$). Furthermore, there were no differences in treatment recommendations made by male versus female participants.

Participants' knowledge of AUD prevalence

To confirm whether or not our particular participant sample had basic knowledge of AUD prevalence by gender, A 3 (Reference Group: General population, Females, Males) × 2 (Participant Gender: Female, Male) mixed factors ANOVA was conducted. A main effect of Reference Group ($F[2, 348] = 94.795$, $P < 0.001$, $\eta_p^2 = 0.353$), revealed that people perceived the rate of AUDs as most common in men ($M = 6.04$, SD = 1.76), followed by the rate of AUDs in general ($M = 5.47$, SD = 1.82), followed by the rate of AUDs in women ($M = 4.53$, SD = 1.79). Bonferroni-corrected paired comparisons ($\alpha = 0.017$) indicated that all three ratings differed from one another (General population vs. Females: $t[176] = 8.784$, $P < 0.001$; General population vs. Males:

$t[175] = 5.765$, $P < 0.001$; Females vs. Males: $t[176] = 12.104$, $P < 0.001$). Female participants rated AUDs as more common overall ($M = 5.62$, SD = 1.74) than did male participants ($M = 4.98$, SD = 1.80; $F[1,174] = 7.306$, $P = 0.008$, $\eta_p^2 = 0.040$). There was no interaction ($P = 0.236$).

Mediation and moderation analyses revealed that participant knowledge of AUD prevalence in the USA by gender neither mediated (all R^2 change <0.014, all Ps > 0.121) nor moderated (all R^2 change <0.016, all Ps > 0.102) any of our main findings of explanation type or vignette gender.

Limitations

First, the controlled experimental design allowed us to investigate a cause-effect relationship between explanations and lay assessments of AUDs. However, it necessarily also limited the number of assessments we could ask people to make, and the number of connections that could potentially be drawn between assessments. Second, the life events were those that may plausibly cause psychological trauma; our stimuli do not cover the full spectrum of potential precursors to AUD. Third, we cannot make claims about the exact degree of this AUD vignette's severity. It is adapted directly from Link *et al.* (1999) and describes tolerance, withdrawal and attempts to cut down on alcohol use. In the *DSM-5* (American Psychiatric Association, 2013), many different subsets of 11 symptoms, including these, qualify someone for an AUD diagnosis, regardless of which individual symptoms are present. Thus, the AUD vignette represents a possible case of behaviors that would qualify for an AUD diagnosis. Finally, the role of people's prior knowledge of AUDs was underexamined in the current work, as we measured only perceptions of the prevalence of AUDs, and not whether participants knew someone with an AUD. It is likely that some of our participants knew someone with an AUD, given their high prevalence. In previous vignette studies, about half of respondents reported knowing someone with a mental health problem (Swindle *et al.*, 2000).

Future directions

Overall, this study takes the important first step of demonstrating that lay beliefs about others with an AUD—including beliefs about stigma, known to be a major barrier to treatment seeking—can be influenced by a life-event explanation. A number of important questions remain to be addressed to more completely understand the link between lay beliefs and peer AUD treatment seeking. For example, if lay people's beliefs about AUD behaviors can be changed by an explanation, can lay people's *behaviors* also be changed? If so, does this change ultimately increase treatment seeking by those with an AUD?

It will also be important to uncover whether direct personal experience with AUDs (see Piacentini *et al.*, 2012), or with someone who has an AUD, mediate or moderate the effect of explanatory context on judgments about AUDs. Future work must also investigate why the same AUD behaviors were perceived as less severe in women than in men, but as equally treatment-worthy across genders, and whether these factors lead to differences in treatment seeking.

To establish further generalizability of the findings, more work is needed to explore lay judgments of a wider range of AUD behaviors (including and excluding tolerance and withdrawal), whether our results would be replicated in larger and more representative samples, and using a wide range of research methodologies. Future work must also explore a fuller range of life event explanations, such as divorce, unemployment, death of a family member, paralysis and amputation. Kim *et al.* (2012) found that the presence of these explanations

for Major Depressive Disorder (MDD) behaviors made them seem less in need of a MDD diagnosis and less abnormal, compared to MDD behaviors with no precipitating life event. As the 'Loss of a Limb' vignette in the current study was adopted from one of Kim *et al.*'s (2012) explanations, we speculate that this wider range would also influence judgments of AUD behaviors.

CONCLUSION

We found new, important evidence that the presence of a causal life-event explanation for AUDs reduces associated stigma. Overall, our findings may reflect a generally held lay belief that when a reasonable explanation is provided for deviant behaviors, the problem is not a medical one and therefore does not require treatment. It seems the lay public does not fully accept the AUD medical model and its accompanying tenet that everyone with a certain set of behaviors needs to seek treatment.

SUPPLEMENTARY MATERIAL

Supplementary material is available at *Alcohol and Alcoholism* online.

CONFLICT OF INTEREST STATEMENT

None declared.

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