Discrimination and social identity processes predict impairment and dysfunction among heavy drinkers

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ABSTRACT

Background: Previous research has linked discrimination to poorer health. Yet health risk behaviours such as heavy alcohol consumption are often targeted with stigmatising public health campaigns. The current study sought to establish the link between experiencing discrimination and health outcomes among heavy drinkers, with a focus on exploring the multiple social identity processes that might underpin this relationship.
Methods: A survey was conducted with 282 people who self-reported consuming alcohol above recommended guidelines. We measured discrimination experienced as a drinker, components of social identification as a drinker (centrality, satisfaction, solidarity, homogeneity, and self-stereotyping), and two health outcomes: psychological distress and severity of alcohol use disorder symptomatology.
Results: Discrimination was a moderate-large predictor of psychological distress and alcohol use disorder symptoms. Three social identity constructs were implicated in the link between discrimination and ill-health: identity centrality and homogeneity positively mediated this relationship while identity satisfaction was a negative mediator. The model explained a large proportion of the variance (39–47%) in health outcomes.
Discussion: Results are interpreted with an emphasis on the need to avoid stigmatising messaging and to prioritise social identity processes to prevent and treat substance use disorders. We further highlight the need for social identity researchers to consider the multidimensional nature of social identities, especially in the context of stigmatised groups.

1. Introduction

Alcohol is the leading risk factor for deaths and disability among 15–49 year olds globally (Griswold et al., 2018). Even small amounts of alcohol cause harm to health (Wood et al., 2018), however, the vast majority of harms accrue to heavy drinkers (Rehm et al., 2017) and their loved ones (Laslett et al., 2013). Therefore, health promotion efforts typically focus on reducing alcohol consumption among heavy drinkers (Crombie et al., 2007). However, such campaigns have mixed efficacy (Dekker et al., 2018; Moss and Albery, 2018) and modelling suggests that global alcohol consumption is increasing (Manthey et al., 2019). Thus, it is clear that new insights are needed to improve the efficacy of interventions to reduce alcohol's harms.

Public health campaigns to reduce alcohol consumption and associated harms have borrowed heavily from anti-smoking initiatives (Gelius et al., 2022; Hawkins et al., 2018), a prominent feature of which is the use of emotive content designed to provoke disgust or shame and stigmatise the target behaviour. Stigmatising campaigns of this form 'de-normalise' health risk behaviour and can legitimise negative community attitudes toward people who engage in those behaviours (Bell et al., 2010). In the context of smoking, public health researchers have argued that, even if stigmatising campaigns have detrimental effects for smoker wellbeing, they may deliver a net benefit for overall health if they are effective in prompting smokers to reduce or quit (Bayer, 2008). However, the evidence for the effectiveness of the specific role of stigma in anti-smoking campaigns is mixed. Some studies have found that the rise of anti-smoking norms in a community is associated with smoking cessation (Durkin et al., 2021; Schoenaker et al., 2018). However, other studies have found that anti-smoking campaigns are associated with increased attempts to quit but reduced likelihood of success in quitting – particularly among disadvantaged smokers, exacerbating health inequities (Bell et al., 2010; Lozano et al., 2020). In experiments, stigmatising smoking can reduce smokers' intentions and self-efficacy to quit (Helweg-Larsen et al., 2019; Kim et al., 2018).

Even if stigmatising public health approaches do deliver a net benefit for overall health in the context of smokers, they have proven problematic in its application to other populations and contexts. For example, public health campaigns tackling obesity have used highly stigmatising messaging about people of a higher weight (Kite et al., 2022). However, such messaging is ineffective in motivating behaviour change, and instead actively undermines engagement in exercise and healthy eating (Rathbone et al., 2022; Vartanian and Smyth, 2013). Furthermore, to the extent that such messaging bolsters negative community attitudes, it may also (both directly and indirectly) cause harm to health (Wu and Berry, 2018). The harmful effects of stigma and discrimination[1] are not unique to people of a higher weight – these are robust predictors of poor health outcomes (particularly mental ill-health) across diverse populations (Haynes et al., 2018; Pascoe and Smart Richman, 2009). Critically, stigma associated with alcoholism can motivate rejection of that identity (i.e., label avoidance), which is linked to reduced help-seeking and more persistent alcohol use (Glass et al., 2013). On the other hand, rehabilitation practitioners have argued that some degree of distress or discomfort is necessary to motivate changing harmful substance behaviours, and indeed, some intervention frameworks are explicit about this (Milan and Varescon, 2022; Morris et al., 2022; Schomerus et al., 2011a).

Thus, further work is needed to understand the processes through which discrimination harms health, and whether it has diverging effects on mental health versus health risk behaviour. Teasing out these pathways is crucial for minimising risk of harm and improving behaviour change efforts. These processes have not been explored in heavy alcohol users. This population has some things in common with cigarette smokers in that the behaviour is legal, highly normalised in some domains, and yet heavy use is often perceived to be a biological addiction that cannot be readily changed through individual willpower. Perhaps more than smoking, heavy alcohol use (being an 'alcoholic') is strongly stigmatised and moralised (Room, 2005; Schomerus et al., 2011b).

1.1. Social identity, discrimination, and health

One established conceptual framework that can help shed light on this complexity is the social identity approach to health (Tajfel and Turner, 1979; Turner et al., 1987). Social identification refers to the sense of self-definition and affiliation that people subjectively experience because of their membership in social groups (e.g., as a pilot, a Canadian, or a vegetarian). Social identity theorising was originally developed to understand intergroup conflict and discrimination, and has been increasingly applied to the study of mental health and health behaviour in the last 15 years (Haslam et al., 2009; Wakefield et al., 2019). Health risk behaviours do not (only) arise from individual values and desires, but can come to inform a person's collective sense of self. For example, people routinely self-define in terms of behaviours that they share with others, and these behaviours can be either health-promoting (e.g., as a parkrunner, Stevens et al., 2019) or unhealthy (e.g., as a stoner, Sussman et al., 2007).

Social identification has proved to be a particularly useful concept for understanding the link between discrimination and health. The rejection identification model states that when people experience discrimination, this actually *increases* social identification with the stigmatised group (Branscombe et al., 1999). This is because that social identity becomes more contextually relevant for explaining a person's experience, as well as creating a heightened sense of common fate with fellow group members (Kellezi et al., 2019; Knowles and Gardner, 2008; Schmitt et al., 2003). This increased social identification has a

paradoxical effect on wellbeing: buffering people against the predominantly negative effects of discrimination on health. The positive link between social identities and health has received particularly strong support (for reviews, see Jetten et al., 2017; Haslam et al., 2018). For example, social identification with social groups predicts lower depression (Cruwys et al., 2014; Postmes et al., 2019), reduced post-traumatic stress (Muldoon et al., 2019), and greater physiological resilience to novel threats (Jones and Jetten, 2011). Some of this evidence is causal: experiments and interventions which increase social identification lead to improved health and wellbeing (Cruwys et al., 2022; Greenaway et al., 2016).

Support for each pathway of the rejection identification model has been found in diverse populations, with particularly strong evidence among cultural, gender, and sexual minority groups (Ball et al., 2021; Chan, 2022; Schmitt and Branscombe, 2002). However, there are some contexts in which the findings have been less clear. While the full rejection identification model has not, to our knowledge, been tested in the context of substance users, several studies have found that social identification is not straightforwardly related to better health among this population (Beckwith et al., 2015; Dingle et al., 2019). Instead, identity *content* appears to be extremely important, because people tend to act in accordance with the norms of their social groups. Identifying as a drinker is a robust and longitudinal predictor of alcohol consumption (Hertel et al., 2021; Lindgren et al., 2016b). Recent work has found a self-reinforcing relationship between peer-group identity and adherence to drinking norms among young people (Rathbone et al., 2023). By contrast, several studies have found that transition from a 'user' identity to a 'recovery' identity predicts a large proportion of the variance in substance use and wellbeing outcomes following discharge from treatment services (Buckingham et al., 2013; Dingle et al., 2015; Frings and Albery, 2021).

More broadly, there is growing evidence that social identification with groups that face highly legitimised stigma, or normalise behaviours that are harmful to health, may be associated with poorer health outcomes. For example, among a population of people with clinical depression symptoms, those who identified as depressed reported poorer wellbeing than those who rejected this label (Cruwys and Gunaseelan, 2016). Among people experiencing homelessness, wellbeing was better among those who rejected categorisation as a homeless person (Walter et al., 2015). And among ex-prisoners, social identification with fellow ex-prisoners predicted poorer wellbeing (Kyprianides et al., 2019). Thus, it appears that social identities can either buffer or *exacerbate* the harmful effects of discrimination on health.

Finally, it is important to also consider the multidimensional nature of social identification. Leach et al. (2008) conceptualise social identity in terms of five sub-dimensions: centrality ("Being [an ingroup member] is an important part of how I see myself"), satisfaction ("Being [an ingroup member] gives me a good feeling"), solidarity ("I feel a bond with [ingroup]"), self-stereotyping ("I am similar to the average [ingroup] person") and homogeneity ("[Ingroup] people have a lot in common with each other"). Other theorists have also proposed multidimensional models of social identity (Cameron, 2004; Ellemers et al., 1999; Kachanoff et al., 2016). Despite this, social identification is typically treated as a unitary construct due to its high internal consistency across sub-dimensions (Cronbach's $\alpha > .90$; Postmes et al., 2013). On the other hand, previous research has found evidence that common social identity measures can show poor internal consistency in stigmatised groups (e.g., Kyprianides et al., 2019), and that different subscales predict different outcomes. For example, Cruwys and Gunaseelan (2016) found that only one of the five sub-dimensions of social identification (*centrality*) was related to wellbeing among people with depression. Previous research on drinker identity has also tended to focus on the centrality dimension (Lindgren et al., 2016a). Other researchers have found that the dimension of identity *satisfaction* is often uncorrelated with other dimensions of social identification in negatively valenced groups (Kuppens et al., 2015; Mlicki and Ellemers, 1996). Identity

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[1] We use the term *stigma* to refer to broader negative community attitudes toward a social group, and *discrimination* to refer to the more concrete negative experiences that members of that group have as a result of such stigma (see also Andersen et al., 2022).

centrality and identity satisfaction seem particularly likely to diverge (Kachanoff et al., 2016). However, the identity satisfaction subscale has often been dropped entirely from research looking at marginalised populations due to the potential for items to be interpreted in ways that are illogical or insensitive (e.g., to avoid presenting participants with statements such as "I am glad to be a victim of sexual abuse", or "Being an ex-prisoner gives me a good feeling"). However, the evidence reviewed above suggests identity satisfaction may be particularly important for understanding ambivalent identity dynamics among stigmatised groups. Overall, the evidence suggests that social identification ought to be conceptualised in more nuanced and multidimensional ways among stigmatised groups, with different aspects of identity not only diverging from one another, but also having diverging effects on health.

1.2. The current study

The present study sought to examine the relationships among discrimination, (multidimensional) social identification, and health in a large survey of heavy drinkers, focusing on two primary outcomes: severity of alcohol use disorder symptoms and psychological distress. While the whole sample were heavy drinkers, this alone is only one of 11 criteria for alcohol use disorder (APA, 2013). Therefore, we expected the level of impairment and dysfunction associated with one's drinking to vary substantially across the sample (as captured by these two outcomes) and that discrimination and social identity processes would explain some of this variance. Building on the literature reviewed above, our predictions were as follows:

1.3. Hypotheses

(1) Social identification as a construct will have divergent dimensions among heavy drinkers, such that treating the five subscales as distinct constructs will provide a better fit for the data than treating social identification as a unitary construct.
(2) Experiences of discrimination as a drinker will be associated with poorer health outcomes, specifically greater alcohol use disorder symptomatology (2a) and greater psychological distress (2b).
(3) Social identity processes will mediate the link between discrimination and health outcomes. Limited previous research has explored the diverging effects of the sub-dimensions of social identification. However, based on previous evidence (e.g., Cruwys and Gunaseelan, 2016), we predicted that discrimination will be associated with higher identity centrality, which in turn will be associated with poorer health outcomes. Based on evidence that identity satisfaction diverges from identity centrality, especially in marginalised populations (Kachanoff et al., 2016), we tentatively predicted converse effects for identity satisfaction. We made no specific predictions for other subscales.

2. Methods

2.1. Participants and design

We recruited a sample of heavy drinkers from online recruitment platform *Prolific* via a two-stage screening process. The survey was only advertised to adult residents of the United Kingdom and United States who had indicated on a pre-screening survey (administered by Prolific to everyone on the platform) that they drank more than 14 standard drinks per week on average. The threshold of 14 standard drinks was chosen because it matches the definition of 'heavy drinking' as designated by the National Center for Chronic Disease Prevention and Health Promotion (2018).

Our survey began with asking participants a single question "Do you currently drink on average 14 or more units of alcohol per week?" (alongside an infographic containing examples of what constitutes a

standard drink or unit of alcohol). 282 participants answered "Yes" to this question and were subsequently directed to complete the entire survey, while 20 participants answered "No" (their drinking behaviour may have changed since completing the Prolific screener) and were excluded as ineligible. A sample of 282 exceeds 'rules of thumb' power guidelines for path analyses (e.g., Hu and Bentler, 1999). Our *a priori* power analysis for path analysis identified a minimum sample size of 200 (for $d = 0.3$ and power = 0.8; Soper, 2020). There were no missing vaues, which is common for data collected on recruitment platforms such as Prolific because some surveys penalise respondents financially for skipped questions (although this study did not).

2.2. Measures

Alcohol use disorder symptomatology. The Alcohol Use Disorder Identification Test (AUDIT; Saunders et al., 1993) was used to assess drinking-related impairment or dysfunction consistent with alcohol use disorder. The AUDIT has 10 items such as "During the past year, how often have you failed to do what was normally expected of you because of drinking?" measured from "Never" (0) to "Daily or almost daily" (4), $\alpha = 0.82$. The AUDIT is a validated screener recommended by the World Health Organisation widely used in healthcare to identify people for whom referral for substance use treatment is appropriate (Reinert and Allen, 2002).

Psychological distress. The Depression, Anxiety, Stress scales short form (DASS-21; Lovibond and Lovibond, 1995; Page et al., 2007) was used to measure psychological distress. The DASS has 21 items measuring the frequency that a respondent has experienced symptoms of common mental disorders in the last week, e.g., "I found it difficult to relax" on a scale from Did not apply to me at all (0) to Applied to me very much, or most of the time (3). While the DASS is often divided into its subscales of depression, anxiety, and stress, here we used it as a global indicator of psychological distress, consistent with our hypotheses and supported by excellent reliability of the total score ($\alpha = 0.95$).

Social identification as a drinker. The multicomponent in-group identification scale (Leach et al., 2008) was used to assess social identification as a drinker. To reduce stigmatised or valenced terminology, the term "alcohol consumer" was used rather than alternatives such as "alcohol user", "heavy drinker", or "alcoholic". We reasoned that this phrasing might better capture both the potential positive *and* negative connotations of the identity from the subjective perspective of participants, and it allowed us to overcome some of the challenges previously faced by researchers in measuring identity satisfaction. Participants responded to 14 items (e.g. "I often think about the fact that I am an alcohol consumer"; "I feel committed to other alcohol consumers") from strongly disagree (1) to strongly agree (7) on each of the five sub-dimensions of social identification: *identity solidarity* ($\alpha = 0.89$), *identity satisfaction* ($\alpha = 0.85$), *identity centrality* ($\alpha = 0.65$), *self-stereotyping* ($r = 0.71$) and *homogeneity* ($r = 0.63$).

Perceived discrimination. The Multidimensional Scale of Perceived Discrimination (Molero et al., 2013) was adapted to measure perceived discrimination that participants had experienced due to their alcohol consumption. This is a 10-item scale includes items such as "I have felt personally rejected for being an alcohol consumer" measured from strongly disagree (1) to strongly agree (5), $\alpha = 0.93$.

3. Results

The final sample was 282 participants aged 18–79 years ($M = 46.97$; $SD = 14.13$). While all participants were heavy drinkers, the degree of functional impairment and alcohol dependence varied substantially, with scores on the AUDIT ranging from 3 to 35 ($M = 14.57$; $SD = 7.02$). Similarly, psychological distress varied widely in the sample from a sum score of 0–61 ($M = 14.03$; $SD = 12.71$). This indicated that there was sufficient variability in our dependent variables to test the hypotheses. Full demographics are presented in Table 1.

Table 1

Descriptive statistics of the sample ($N = 282$).

Age	18–25	8.5%
	26–35	12.4%
	36–45	26.3%
	46–55	22.7%
	56–65	21.6%
	66+	8.5%
Gender	Male	56.4%
	Female	42.6%
	Non-binary/gender diverse	1.1%
Education	< High school	2.5%
	High School	35.8%
	Bachelor's degree/diploma	41.1%
	Higher degree	18.4%
	Other	2.1%
Employment	Employed full time	43.6%
	Employed part-time	12.1%
	Self-employed	8.9%
	Unemployed	12.1%
	Student	4.6%
	Retired	18.8%
Relationship status	Single/divorced/widowed	28%
	Married	48.2%
	In a relationship	23.8%
Children	Yes	59.6%
	No	40.4%
Heavy drinkers	Reported drinking above World Health Organisation safe drinking guidelines (14 standard drinks per week)	100%
Alcohol use disorder risk category (AUDIT)	Low risk	16.3%
	Hazardous/harmful	39.4%
	Alcohol dependence	44.3%

To evaluate H1, internal consistency of the 14 items comprising the social identification scale was assessed using both Cronbach's α and exploratory factor analysis (EFA), and correlations were considered. We chose to conduct an exploratory, rather than a confirmatory, factor analysis because the previous literature has raised questions about how social identification is best conceptualised among stigmatised groups. Given this uncertainty and that we were the first to adapt this measure for heavy drinkers specifically, an EFA was the best means to explore the factor structure of this measure. Internal consistency of the full social identification scale was lower in this sample (α = 0.82) than is typically seen for this measure in non-stigmatised groups (≈0.95; Postmes et al., 2013; Reysen et al., 2013). EFA was conducted using principal axis factoring (data were suitable for EFA occurring to a Kaiser-Meyer-Olkin score of 0.79 and a significant Bartlett's test of sphericity, $\chi^2(91) = 2161.44, p < .001$, Watkins, 2018). A four-factor solution was suggested by eigenvalues (>1) and scree plot. Varimax rotation suggested that the four factors corresponded closely to Leach et al. (2008)'s model of social identification. Specifically, the first factor comprised identity satisfaction items (loadings >0.65); the second factor comprised homogeneity and self-stereotyping items, (>0.59); the third factor comprised solidarity items (>0.67); and the fourth factor comprised two centrality items (>0.84). We interpreted the EFA results as largely supporting the latent structure of social identity proposed by Leach et al. (2008), who

found that self-stereotyping and homogeneity together form a superordinate construct referred to as *self-definition*. Given this, we retained the five subscale structure proposed by Leach et al. (2008) to maximise consistency with the previous literature.

Finally, correlations were considered between the five subscales of social identification (calculated as recommended by Leach et al., 2008) and discrimination, severity of alcohol use disorder symptomatology, and psychological distress. As can be seen in Table 2, three subscales (centrality, solidarity, and homogeneity) had significant positive correlations with the other three variables of interest. However, the correlations between identity satisfaction and these three variables were significant and negative, while identity self-stereotyping was uncorrelated with these three variables. Furthermore, the correlations among identity subscales ranged from moderately positive ($r = 0.55$ for homogeneity and self-stereotyping) to moderately negative ($r = -0.43$ for solidarity and satisfaction).

In sum, social identification as an alcohol consumer was not unidimensional in the current sample of heavy drinkers. There was evidence for divergent relationships with the other variables of interest, particularly such that the satisfaction subscale tended to be associated with a more positive profile, whereas the other subscales (especially centrality) were associated with a more negative profile. Together, this evidence was consistent with H1 and provided an empirical rationale (consistent with our theoretical reasoning) for the treatment of social identification as a multifaceted construct among this population.

To evaluate H2, the correlations between perceived discrimination and the two outcome variables (alcohol use disorder symptomatology and psychological distress) were considered. Consistent with H2, discrimination had a moderately strong positive association with both alcohol use disorder symptomatology ($r = 0.53, p < .001$) and psychological distress ($r = 0.53, p < .001$).

To evaluate H3, a path analysis was specified including all manifest variables. Initially, a conglomerate social identification measure (average of all 14 items) was entered as the mediator. Error terms were specified for all endogenous variables and the two outcome variables were allowed to covary. This model (Model 1) was fully identified and so model fit indices were not available. However, it performed poorly as indicated by a non-significant effect of perceived discrimination on social identification (β = 0.05, p = .446), and non-significant effects of social identification on both psychological distress (β = -0.06, p = .242) and severity of alcohol use symptom severity (β = 0.08, p = .124). Building on the findings above, we instead entered all five subscales of social identification as simultaneous mediators in the model (Model 2). The mediating variables were allowed to covary with one another. In Model 2, two of the social identity subscales (self-stereotyping and solidarity) did not add explanatory power over the other social identity subscales and had non-significant relationships with the other variables of interest. Furthermore, the model was still fully identified. Thus, to obtain fit indices and the most parsimonious model, the non-significant mediators and covariances (between satisfaction and the other mediators) were dropped from the model to yield Model 3.

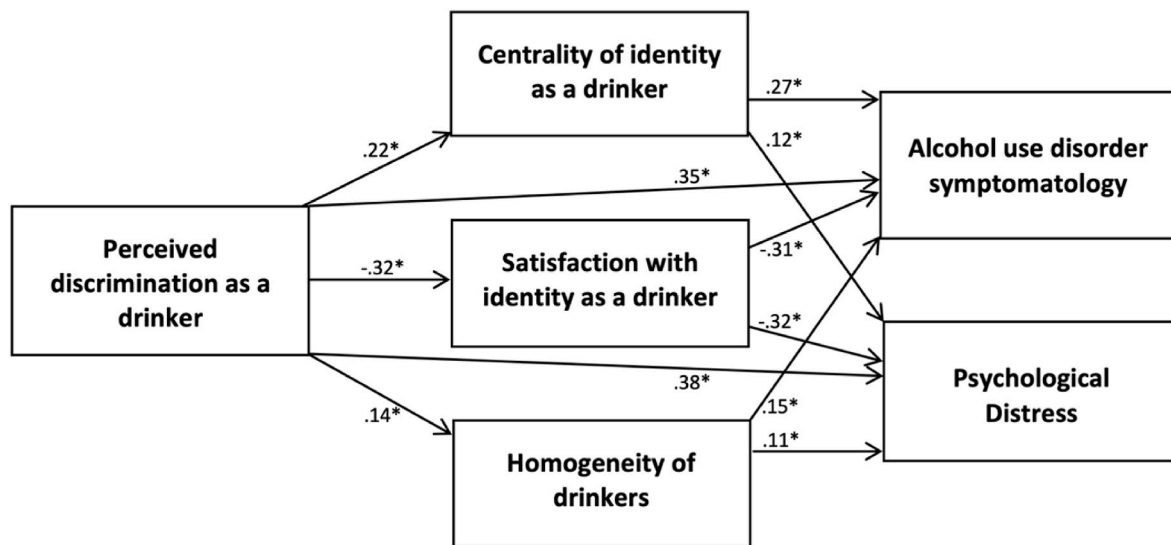Model 3 was the final model and is displayed in Fig. 1. Six indices

Table 2

Bivariate correlations.

	1.	2.	3.	4.	5.	6.	7.
1. Perceived discrimination							
2. Severity of alcohol use disorder symptomatology	.534**	1	.542**	.242**	−.407**	.363**	.010
3. Psychological distress	.526**	.542**	1	.160**	−.434**	.206**	−.111
4. Identity solidarity	.235**	.242**	.160**	1	.209**	.366**	.443**
5. Identity satisfaction	−.318**	−.407**	−.434**	.209**	1	.043	.308**
6. Identity centrality	.218**	.363**	.206**	.366**	.043	1	.162**
7. Identity self-stereotyping	−.076	.010	−.111	.443**	.308**	.162**	1
8. Identity homogeneity	.141*	.245**	.178**	.466**	.025	.186**	.546**

*$p < .05$.

**$p < .01$.

Fig. 1. Social identity processes mediate the relationship between discrimination and negative outcomes associated with heavy drinking. Standardised beta co-efficients are provided for each pathway in the model, $*p < .05$. Indirect effects: psychological distress: $\beta = 0.14$, $p < .001$; severity of alcohol use symptomatology: $\beta = 0.18$, $p < .001$.

from the three primary categories of fit were used to evaluate the model: three absolute fit indices ($\chi^2/df(2) = 2.53$, $p = .080$, SRMR = 0.039, AIC = 55.06), a relative fit index (NFI = 0.99) and two non-centrality-based indices (CFI = 0.99, RMSEA = 0.074). Model fit was excellent on all indices (Hu and Bentler, 1999), and additionally, modification indices did not recommend any changes to the final model. All pathways (including indirect pathways) were significant. This model explained 47% of the variance in alcohol use symptomatology and 39% of the variance in psychological distress.

Consistent with H3, discrimination predicted greater centrality of drinker identity ($\beta = 0.22$, $p < .001$) and a greater perception that drinkers were a homogenous group ($\beta = 0.14$, $p < .017$). By contrast, discrimination predicted *reduced* satisfaction with one's drinker identity ($\beta = -0.32$, $p < .001$).

Not pictured: All endogenous variables had error terms included, and covariances were specified between error terms for centrality and homogeneity, and between the two outcome variables.

These three dimensions of social identification were each significantly associated with alcohol use disorder symptomatology and psychological distress. Centrality of drinker identity and homogeneity of drinkers both predicted more negative outcomes, specifically greater alcohol use disorder symptomatology ($\beta_{centrality} = 0.27$, $p < .001$; $\beta_{homogeneity} = 0.15$, $p < .001$) and greater psychological distress ($\beta_{centrality} = 0.12$, $p = .018$; $\beta_{homogeneity} = 0.11$, $p = .022$). By contrast, satisfaction with one's identity as a drinker predicted more positive outcomes: lower alcohol use symptomatology ($\beta_{satisfaction} = -0.31$, $p < .001$) and lower psychological distress ($\beta_{satisfaction} = -0.32$, $p < .001$).

Finally, we conducted three sensitivity analyses, in which we examined three potential moderators of these relationships: (1) severity of alcohol use problems, (2) gender, and (3) age. First, we repeated the path analysis among the subsample who scored at least 8 on the AUDIT (i.e., excluding the 16% of the sample whose drinking was classified as 'low risk') and results were qualitatively the same. To provide a quantitative comparison, the revised sample was compared with the full sample by constraining all hypothesised pathways to be equivalent in size across the two groups, Model 4. The model comparison indicated no significant difference in fit, $\chi^2(11) = 4.19$, $p = .964$, and critical ratios indicated no significant differences for any individual pathways. This provides evidence that our findings were not unduly influenced by the minority of the sample with fewer alcohol-related problems. Second, we compared men and women using a nested model approach. Again the

model comparison indicated no significant difference in fit, $\chi^2(11) = 13.16$, $p = .283$, and critical ratios indicated no significant differences for any individual pathways. Third, we compared people above versus below the median age of the sample (47 years) using a nested model approach. In this case, the model did indicate a significant worsening of fit when the size of pathways were constrained to be equal across these two groups, $\chi^2(11) = 23.797$, $p = .014$. Inspection of critical ratios indicated two pathways that were weaker among older participants (albeit in the same direction): the direct path from discrimination to psychological distress ($\beta = 0.23$, $p = .003$), and the path from discrimination to identity satisfaction ($\beta = -0.15$, $p = .066$).

4. Discussion

This study evaluated the relationship between discrimination and health-related outcomes among heavy drinkers, with a focus on unpacking the social identity processes that underpin this relationship. We found that discrimination was associated with poorer health, operationalised both in terms of alcohol use disorder symptom severity and psychological distress. This effect was mediated via three distinct social identity pathways: drinker identity centrality and homogeneity tended to predict more negative health outcomes, while drinker identity satisfaction predicted more positive outcomes. Contrary to the rejection identification model, discrimination affected all three identity processes in ways contrary to good health. Specifically, experiences of discrimination were associated with greater perceptions that one's alcohol consumer identity was central and the group was homogenous, and these dimensions of identity predicted poorer health. By contrast, the only dimension of social identification (identity satisfaction) that provided protective benefits for health was negatively associated with discrimination. The final two dimensions of identity (solidarity and self-stereotyping) did not contribute unique variance to the model after accounting for the other three components.

Previous research has found that discrimination can increase social identification (Schmitt and Branscombe, 2002), primarily because it communicates that this social category is a contextually meaningful lens through which to interpret one's experience. It is perhaps surprising, then, that in this sample, identity satisfaction was negatively associated with discrimination. However, as others have theorised (Mlicki and Ellemers, 1996), it is logical that negative experiences arising from one's group membership would lead a person to see that group membership

less positively. Our results accord with previous findings that low group status reduced identity satisfaction but not other identity components (Ellemers et al., 1999). The diverging effects of identity satisfaction on health, compared to centrality and homogeneity, is best interpreted in the context of the literature on social cure and social curse effects. There is increasing evidence that identifying with stigmatised social groups has complex and, at times, seemingly contradictory effects on health (Kellezi et al., 2019; Walter et al., 2015). In this sample of heavy drinkers, this was such that health outcomes were better among those with high identity satisfaction but low centrality and homogeneity (i.e., "It is good to be a drinker, but it's not that important to me and we're a diverse group"). It may be that the centrality and homogeneity dimensions were more intwined with the stigma of being a heavy drinker and this accounted for their harmful effects.

4.1. Implications

The findings speak to the importance of considering social identification as a more nuanced concept among stigmatised groups. While previous studies have provided indicative evidence to this effect (Kachanoff et al., 2016; Kuppens et al., 2015; Kyprianides et al., 2019), ours is the first to look at these processes among heavy drinkers and to simultaneously consider all five sub-dimensions specified by Leach et al. (2008). This sheds light on why previous tests have yielded mixed findings. By treating social identification as a unitary concept, at least in the context of stigmatised groups, researchers may underestimate the importance of social identity processes, which can have unique and potentially opposing effects on key outcomes of interest. Further research is needed to clarify which subdimensions are important in which context (e.g., solidarity and self-stereotyping may contribute unique predictive power in other groups or samples).

Importantly too, this study yielded large effect sizes: our four predictor variables explained nearly half of the variance in severity of symptoms and functional impairment among a sample of heavy drinkers, as well as nearly forty percent of the variance in mental health symptoms. This illustrates that discrimination and social identity processes are not 'optional extras' to consider conceptually and therapeutically, but core to our capacity to understand and tackle substance use and mental ill-health. Previous studies of social identity processes in substance use recovery have found similarly large effect sizes (Dingle et al., 2015), which suggests that this finding is not an anomaly. We hope these data add weight to calls for an emphasis on social identity processes as fundamental to our capacity to predict – and ultimately, intervene to reduce – mental ill-health and substance use.

This study suggests that interventions that rely on stigma are unlikely to be effective in reduce alcohol consumption and associated harms. That is, while different aspects of social identity worked in different directions, discrimination had a uniformly negative effect, associated with greater alcohol use disorder symptomatology and greater psychological distress. These negative outcomes occurred through the toxic effects of discrimination on different aspects of social identity. Shame may be relevant here: experiencing discrimination appears to undermine the more satisfying (and seemingly, less harmful) aspects of drinker identity, while intensifying the components of identity that were, in this context, harmful (centrality and homogeneity).

In addition to avoiding stigmatising content, this project has other lessons for how interventions might be enhanced to reduce alcohol harms. In particular, in highlighting the intertwined nature of identity and substance use, it lends weight to calls for interventions to focus on supporting positive *identity transition* as a key component of recovery (Best et al., 2016; Frings et al., 2016). More precisely though, these findings highlight one reason why heavy drinkers might be ambivalent about change, as highlighted by motivational interviewing approaches (Britt et al., 2004). Some aspects of one's identity as a drinker may be experienced as positive and supportive of healthy choices (in this case, identity satisfaction), while others are experienced as negative and

health-undermining (identity centrality and homogeneity). Previous studies have found that social identity interventions can have benefits for health (Haslam et al., 2019; Steffens et al., 2021). However, it remains for future research to establish whether interventions can precisely target these subcomponents of social identity in ways that would allow a reduction in centrality and homogeneity while preserving satisfaction.

4.2. Strengths and limitations

Strengths of this study included its validated measures and two-stage recruitment process to obtain a well-powered sample of people who were at elevated risk of alcohol use disorder. Like all research, however, the present study also had limitations. Most important was its correlational design: direction and causality cannot be established with these data. However, the associations should be interpreted in the context of experiments and clinical trials that have, for example, established causal links from social identity processes to health outcomes in other populations (e.g., Cruwys et al., 2022; Fong et al., 2019). While we did test the invariance of our model across gender and age and found minimal differences, the complex interactions between drinker identity and other identities (i.e., intersectionality) warrant further consideration. This is important to explore in future research, especially because of evidence that women and cultural minorities tend to be more stigmatised for substance use (Kulesza et al., 2016; Meyers et al., 2021). Finally, although the model we tested here was based on prior theorising (e.g., Schmitt and Branscombe, 2002) and empirical evidence (Cruwys and Gunaseelan, 2016), other researchers have found that social identity dimensions can moderate the relationship between discrimination and wellbeing (e.g., Fletcher and Everly, 2021; Lou et al., 2022). This is plausible and warrants attention in future research.

5. Conclusions

Debate has continued over whether stigmatising content can be ethical or effective to motivate health behaviour change at scale. However, a growing body of evidence suggests that being exposed to discrimination in this way can undermine both mental and physical health. The current study supported this link in a sample of 282 heavy drinkers. It also shed light on the different ways in which being a drinker can become internalised as a social identity, and that this social self-concept predicts substantial variance in alcohol-related impairment and dysfunction. Different components of identity had opposing relationships with health, such that identity satisfaction was protective, while identity centrality and homogeneity were associated with an elevated profile of risk. However, discrimination affected these different aspects of identity in ways that were consistently damaging for health. Integrating these findings into health practice and policy will require greater attention to the importance of social identity as central to the onset of, and recovery from, alcohol and other substance related problems.

CRediT authorship contribution statement

Tegan Cruwys: Formal analysis, Funding acquisition, Methodology, Supervision, Writing – original draft, Writing – review & editing. **Joseph Selwyn:** Conceptualization, Data curation, Methodology, Project administration, Writing – review & editing. **Joanne A. Rathbone:** Conceptualization, Validation, Writing – review & editing. **Daniel Frings:** Validation, Writing – review & editing.

Data availability

Data will be made available on request.

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